BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 27 1940

GONORRHOEAL MYOCARDITIS

BY

OLE BANG, M.D.

(From Medical Department III, Kommunehospitalet, Copenhagen; Chief Physician, Poul Iversen, M.D.)

Heart lesions resulting from gonococcal infection are well known so far as septicaemia is concerned. Most frequently the ulcerating endocarditis is described, though it was emphasized many years ago (Councilman, 1893) that both the myocardium and the pericardium are often involved, so that a pancarditis ensues. These cases are rare. Rowlands and Simpson (1937), going through the London Hospital material from the years 1912 to 1936, were able to find only six such cases. Gillespie and Thompson (1937) report three instances of endocarditis among 1,917 infected persons; while Neumann and Bingenheimer (1937) among 5,262 cases saw only one case with septicaemia. Williams (1938), on the other hand, holds that gonococcal infection is responsible for 26 per cent. of all cases of bacterial endocarditis. In this connexion it must be pointed out, however, that while a true septicaemia, or bacterial endocarditis, is a rare occurrence in gonococcal infection, a transitory bacteriaemia seems to be a fairly common event, judging from the frequency with which gonococci can be cultivated from the joints, bursae, etc., and even sometimes from the blood in complicated cases. A benign endocarditis has also been described, appearing as transitory murmurs, palpitations, and praecordial pain in ambulant patients with apparently uncomplicated urethritis. It is looked upon as a "toxic" manifestation.

Apart from the myocardial involvement in septic endocarditis, myocarditis is seldom established as a complication in gonococcal infection. Dittrich (1930) refers to two instances of isolated myocarditis complicating gonorrhoeal arthritis, showing tachycardia and arrhythmia and leaving a state of tachycardia after exertion; but reference to the literature of recent years reveals no other mention of isolated myocarditis except one. This, by Guldberg (1935), in Oslo, concerns a man aged 35 who had signs of myocarditis three weeks after urethritis; a partial auriculo-ventricular block lasted four months without any fever or arthritis. Besides, gonococcal infection is never mentioned in the current textbooks on heart diseases as a possible cause of myocarditis, though almost every other common infectious disease is recognized as such.

In view of this it is rather surprising that in the course of one year in an ordinary medical ward we should see the following series of cases in which gonorrhoeal myocarditis may be regarded as a probable diagnosis. It may mean that this condition, escaping detection since it is not searched for, is more common than ordinarily believed. This, with some questions arising, is discussed below.

Case Records

[All negative findings are left out.

GR = Gonococcus complement-fixation reaction, carried out in the State Serum Institute.

SR = Sedimentation rate (millimetres in one hour).

Ecg = Electrocardiogram; the chest leads occasionally employed are those advocated by Larsen and Warburg (1937); in this modification the main deflections should be upright as in the usual leads.]

Case 1.—Man aged 33. Ten years ago primary urethritis, uncomplicated. Six years ago urethritis (probably recurrence) with severe complications: arthritis, tenosynovitis, metastatic conjunctivitis. GR +11. Subsequently treated with compligon and streptamid, as he was suffering from chronic urethral discharge and arthralgia. Now complaining of attacks of anginal pain and palpitations, and so admitted to hospital. Heart: auscultation and radiograph reveal no definite abnormality. Ecg (Fig. 1): P-Q = 0.25 sec.; P-Q remained prolonged in subsequent tracings, with small variations. Normally the P-Q interval is less than 0.18 second and never greater than 0.2 second. GR +5. SR 14.

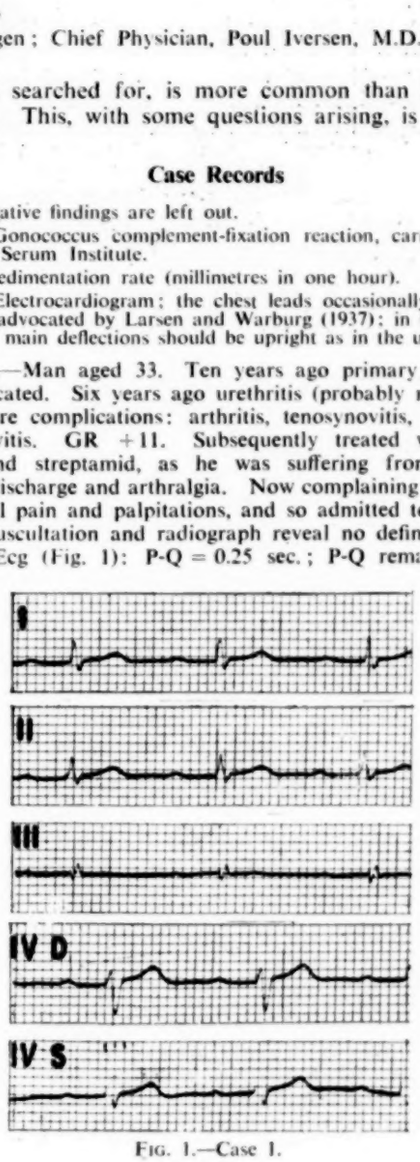


FIG. 1.—Case 1.

Comment.—Signs of myocarditis are found in a case of chronic complicated gonorrhoea.

Case 2.—Man aged 52. Twenty-five years ago gonorrhoea accompanied by arthritis, treated in hospital. Sixteen and ten years ago attacks of arthralgia. A fortnight ago new attack

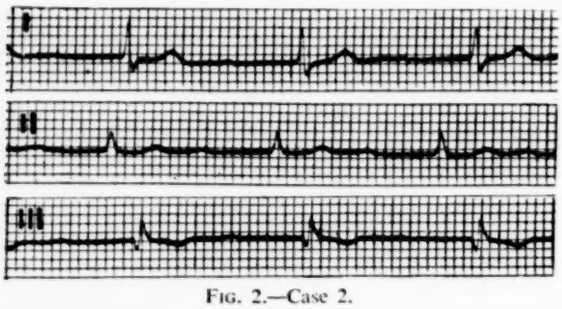


FIG. 2.—Case 2.

of arthralgia following a neglected sore throat and fever; admitted to hospital. A diagnosis of chronic arthritis, especially in a hip-joint and the knees, was established. Heart: a slight murmur heard; radiograph negative. Ecg (Fig. 2): P-Q more than 0.4 sec.; incomplete bundle-branch block. GR +1, 0, 0. SR above 100, falling.

Comment.—Signs of myocarditis are found in a case of chronic gonorrhoeal rheumatism.

Case 3.—Man aged 33. Admitted to eye department with severe double conjunctivitis (gonococci in the pus) three weeks after the primary urethritis and treated with streptamid and milk injections. After a week transferred to medical department with very severe arthritis, especially of knees and ankles, fever (max. 39.8° C.), and anaemia (haemoglobin 45 per cent., red cells 2,500,000 per c.mm.). Heart: tachycardia; questionable murmur; questionable enlargement in *x*-ray film. Ecg (Fig. 3): Incomplete bundle-branch block (Bailey's Type 2). GR +8, +2, 0. SR 152, falling.

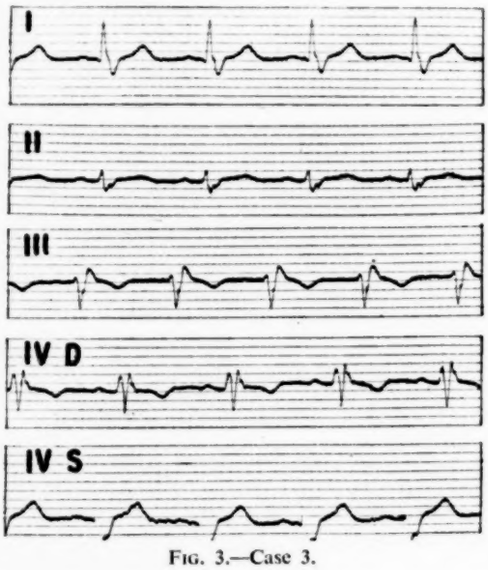


FIG. 3.—Case 3.

Comment.—Severe myocarditis develops in a case of acute gonorrhoeal arthritis.

Case 4.—Man aged 25. Uncomplicated gonorrhoea two years ago. Now admitted with arthritis, starting in an ankle and subsequently attacking several other joints, especially a hip-joint and the wrists. Auscultation and radiograph reveal a fresh transitory pleurisy on the right side. Temperature up to 39.9° C. Heart: passing pain in the praecordium; soft systolic murmur heard; radiograph of heart negative. Ecg (Figs. 4a, 4b, 4c): Changes are noted as follows: (*a*) low T_1; (*b*) P-Q above 0.2; T_3 now negative; Q_3 questionably enlarged; (*c*) P-Q and T summits now normal. GR +1, +1, +2, +1, +1. SR 116, falling subsequently.

Comment.—There can be little doubt that the arthritis is gonorrhoeal, and so is probably the pleurisy. Signs of an acute transitory myocarditis are demonstrated.

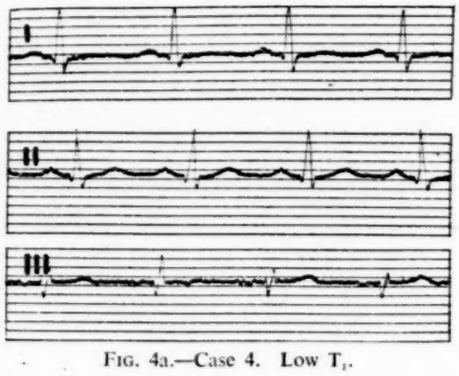


FIG. 4a.—Case 4. Low T_1.

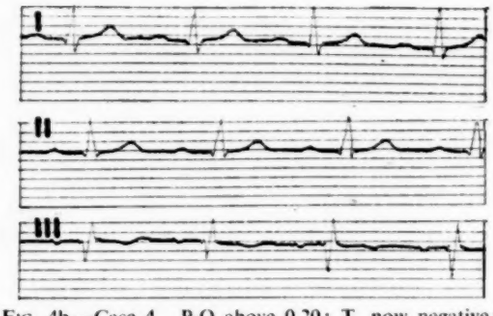


FIG. 4b.—Case 4. P-Q above 0.20; T_3 now negative; Q_3 questionably enlarged.

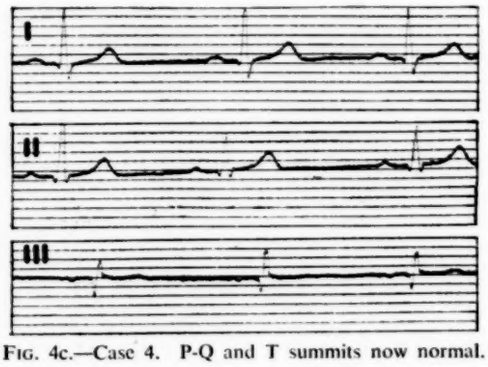


FIG. 4c.—Case 4. P-Q and T summits now normal.

Case 5.—Man aged 36. Diphtheria four years old. Rheumatic fever (?) about the age of 9 or 12, leaving no ill-health. Uncomplicated gonorrhoea as a youth. Three years ago "rheumatic fever," treated in another hospital; arthritis of a shoulder, elbow, and knee were found, and the GR was positive (+3, +2, +1); SR 117, falling. There were albumin, erythrocytes, leucocytes, and epithelial cells in the urine. The prostate was normal. A month ago "rheumatic" pains in the chest and the right wrist, subsequently in the right hip, following a sore throat and a motor-car trip during which he was exposed to cold and draught. Admitted with arthritis, especially of the right wrist, and fever (max. 39.3° C.). Anaemia developed (haemoglobin 75 per cent.). The urine was normal. Heart: pain in the sternal region for about two weeks (coinciding with changes in the electrocardiogram). Ecg (Figs. 5a, 5b): In Fig. 5b, a month after Fig. 5a, T_1 is flattened and T_2 is negative; three weeks later the electrocardiogram (not shown) is exactly like Fig. 5a. GR +2, +7. SR 109, −127, −19.

Comment.—The rheumatic infection is dubious, while it is known that gonococcal infection has taken place. During the attacks of arthritis observed in hospitals the GR was positive; so there is little doubt that the gonococcal infection is the cause

of the recurrent arthritis. The changes in the electrocardiogram point to transitory myocardial damage. It cannot be denied that the anaemia may be instrumental in producing

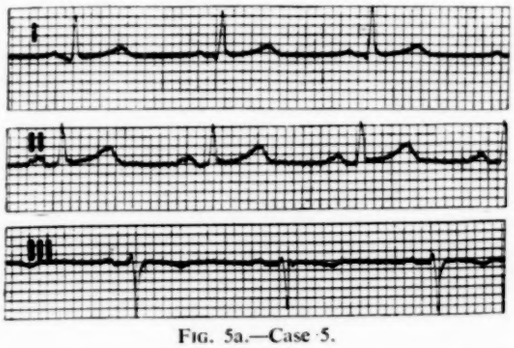


FIG. 5a.—Case 5.

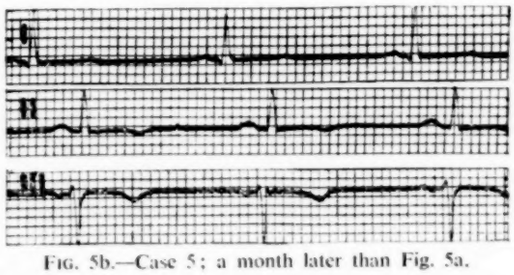


FIG. 5b.—Case 5; a month later than Fig. 5a.

such features in the electrocardiogram, even though frequent readings did not show less than 75 per cent. of haemoglobin. It seems most probable, however, that this is another instance of transitory myocarditis occurring in a case of gonorrhoeal arthritis.

Case 6.—Man aged 26. Diphtheria with croup when 4 years old, treated with serum and tracheotomy. Scarlet fever at age 6 to 7; gonorrhoea at 18 and again five months ago. One month ago tenderness of left heel and a red and swollen Achilles tendon. Ten days ago fever (39° C.) and pain in the left hip-joint and a toe. Admitted to hospital with slight

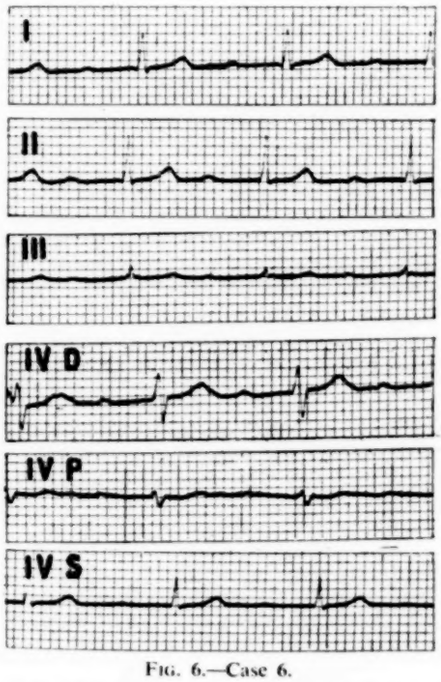


FIG. 6.—Case 6.

arthritis in the hip and toe, and fever (38° C.); in a few days all symptoms had disappeared. Heart: no murmur; no subjective symptoms. Ecg (Fig. 6): In the first electrocardiogram (not shown) the P-Q was 0.23 to 0.25 sec.; in the next one, three weeks later, the P-Q was 0.31 to 0.32 sec. GR 0, 0. SR 33, subsequently falling.

Comment.—The negative GR does not eliminate gonococcal infection, as several cases of complicated gonorrhoea (salpingitis; arthritis with gonococci in the pus) are known to occur with a negative GR. The fact that the P-Q is changing seems to exclude the possibility of a long-standing myocarditis. A gonorrhoeal myocarditis affords the most reasonable explanation.

Discussion

The common feature in these six instances of myocarditis is the occurrence of the condition in carriers of gonococcal infection. Though there are no means available for the establishment of definite proof, there is a very strong suggestion indeed that gonococcal infection is the cause. Endocarditis seems to accompany myocarditis in some of the cases, but we shall go no further into that, since it is not, as is myocarditis, demonstrable by objective methods. The fact that some of the patients did not show any signs of heart involvement on routine examination seems to support the view that myocardial damage may escape notice if not looked for. Accordingly the incidence of this complication may be higher than is assumed at present.

The *pathogenesis* of the myocardial lesion is not clear. In septicaemia or bacteriaemia there may be propagation from the endocardium or from bacterial foci in the myocardium. It is more probable, however, that in the majority of cases the myocardial damage is brought about by some agent originating in a distant focus—for example, in the genital sphere or in a joint.

The *prognosis* is varying. In Cases 4, 5, and probably 6, the myocarditis seems to be a passing event, corresponding with the banal changes often met with in other infectious diseases, as, for instance, influenza and pneumonia. There is little doubt, however, that the outlook is much graver with regard to the two patients (Cases 2 and 3) who left hospital with a bundle-branch block. A follow-up examination of Case 1, carried out almost a year after the onset of his cardiac symptoms, revealed that he was still out of work owing to his attacks of pain and palpitations, and the electrocardiogram showed lengthening of the P-Q, besides a slurring of the QRS; the complement-fixation reaction has remained positive (+ 5).

There is, in other words, the possibility that some of these patients will return to hospital sooner or later with chronic "degenerative" heart disease. The question is: Will the aetiology suggest itself by that time? The question may be reversed: When we treat to-day a series of cases with degenerative (and valvular) heart disease of obscure origin, must we not suspect some of them to be the result of a remote but probably somewhere persisting gonococcal infection?

When the gonococcal complement-fixation reaction was introduced into the routine examination of all acute arthritis cases we learnt that a great proportion of seeming rheumatic fever cases were in reality gonorrhoeal rheumatism. *A priori*, it seems not improbable that some of the "rheumatic" heart diseases should be unmasked in the same way. In making the diagnosis of rheumatic heart disease we may have been placing too much confidence in the information we were getting about rheumatic arthritis in the anamnesis; no doubt a good many cases of gonorrhoeal arthritis have sailed under that false flag. It may prove to be worth while to search the anamnesis for gonorrhoea and its complica-

tions, just as we are looking for syphilis and rheumatic fever.

A prominent feature of gonococcal infection is its obstinate persistence—that is, the tendency to formation of chronic foci. This fact seems to reflect itself to some extent in the course of the complement-fixation reaction. Investigation into this reaction is now being made in co-operation with Dr. Peter Krag of the State Serum Institute. One of the results may be mentioned in this connexion—namely, the surprisingly high incidence of positive reactions found among patients without apparent signs of recognized sequels to gonococcal infection. The Wassermann reaction has aided in the evaluation of many a syphilitic manifestation that would scarcely have been diagnosed as such without this serologic evidence. Perhaps in future the gonococcal complement-fixation reaction will help to reveal that chronic gonococcal infection plays a part in one or more diseases not hitherto attributed to this cause. Certain heart diseases may be among them.

Summary of Conclusions

Apart from the myocardial involvement in the bacterial endocarditis of gonococcal septicaemia, myocarditis is seldom established as a complication in gonococcal infection. In view of this it seems surprising that a series of six instances of what is regarded as gonorrhoeal myocarditis was encountered in the course of one year in an ordinary medical ward. It seems probable that this condition often escapes detection, since suggestive symptoms may be absent.

The diagnosis was made on the ground that all six cases had changes in the electrocardiogram occurring in the course of acute or chronic complicated gonococcal infection. In some instances the myocarditis was slight and transitory, as may be the case in many simple infections—for example, pneumonia. However, in two cases incomplete bundle-branch block developed and persisted, and in a third case the anginal pain still troubled the patient considerably when he was re-examined a year later. Such a course suggests the possibility that some of these patients will return to hospital sooner or later with chronic heart disease. It is possible, also, that some of the chronic "degenerative" heart diseases which we see to-day arise from gonococcal infection.

The gonococcal complement-fixation reaction has been instrumental in pointing out how great a proportion of so-called rheumatic arthritis cases were really gonorrhoeal. It may be worth while to search the anamnesis of heart patients for gonorrhoea as we search it for syphilis and rheumatic fever, and the complement-fixation reaction may reveal that some instances of heart lesion attributed to rheumatic infection ought to be regarded as following on persistent gonococcal infection.

REFERENCES

Councilman, W. T. (1893). *Amer. J. med. Sci.*, **106**, 277.
Dittrich, O. (1930). Jadassohn's *Handb. Haut. u. Geschl.*, **20**, pt. 2, J. Springer, Berlin.
Gillespie, J. O., and Thompson, R. M. (1937). *Milit. Surg.*, **80**, 418.
Guldberg, G. (1935). *Nörsk Mag. Laegevidensk.*, **96**, 576.
Larsen, K. H., and Warburg, E. J. (1937). *Hospitalstidende*, **80**, 276.
Neumann, H., and Bingenheimer, E. (1937). *Derm. Wschr.*, **105**, 1099.
Rowlands, R. A., and Simpson, S. L. (1937). *Brit. J. ven. Dis.*, **13**, 215.
Williams, R. H. (1938). *Arch. intern. Med.*, **61**, 26.

Bronchography.—The authors describe a method by which radiographs may be obtained showing the lipiodol-filled bronchi standing out in relief. Some excellent examples are included in the article.—Bronchography in Relief. M. R. Castex, E. Alvarez, and E. S. Mazzei.—*Arch. méd.-chir. Appar. resp.*, No. 6 (1938), **13**, 441.

THE PREVENTION OF ANXIETY

BY

R. G. GORDON, M.D., F.R.C.P.Ed.

Physician, Royal United Hospital, Bath

A young happily married woman aged 30 with two healthy children is the victim of intense anxiety if she goes out alone. While she is working about the house she is all right. If she goes out in the company of certain people she is practically all right. The best "protection" in this respect is her husband, next her sister, then her doctor—the general practitioner who looks after the family, but any doctor is "some use." Other people help but do not abolish the anxiety.

Physically she is healthy and any organic disease can be excluded, but in addition to the anxiety she complains of uncertain sleep, dull headache, poor memory, and inability to concentrate. Asked to describe the anxiety, she states that it seems that something dreadful is going to happen, probably that she is going to die. Her husband would prevent it happening and doctors would see that it didn't. The anxiety was not always a fear of death; it used to be a fear of going insane, but that has now changed to a fear of death. The anxiety is obsessional in nature—that is, intellectually she realizes that it is irrational, but emotionally she is quite powerless to overcome the feeling.

When asked what to her is the significance of death, she says she is not sure, but states vaguely: being separated from those she knows and loves, being "shut up in a box." She hopes that she would be liberated and reunited to her loved ones after death, but is very uncertain and muddled about this. Questioned about going insane, she replies with a heated diatribe against the iniquity of the system by which doctors can shut people up for no adequate reason. Pressed on this point she said, "Of course, good doctors would not do this, but it is scandalous how easily it could be done."

The foundation for this attitude seemed to be that an aunt of her husband's had been "put in an asylum when she was really quite sane." This was interesting, for this aunt was clearly a psychopathic individual, was an incorrigible thief, and, by what possibly was somewhat of a "wangle," had been represented in court as irresponsible for her actions and confined in a mental hospital instead of in a prison, a procedure which apparently was regarded as a lesser evil by most of her relatives but as a scandalous crime by our patient.

The real basis of the present anxiety seemed, therefore, to be a fear of going out of her mind and of being shut up away from her friends. The fear had later been transferred to death as a lesser evil, since if she was dead she herself would not know about it. A light is thrown on this by her previous medical history. She had been quite healthy, apart from one or two exanthemata in childhood, till a very short time before her marriage, when she had an attack of appendicitis which necessitated operation and the postponement of her wedding. This was attended by no anxiety whatever, only exasperation at the upset of arrangements. A severe attack of influenza after her marriage left her similarly emotionally unscathed. Her next illness six months later, however, had very different results. At the time it seemed trivial: she knocked her head on a low door and sustained slight concussion. She was not rested enough and began to have headache, loss of memory, and poor concentration. These symptoms,

with gradually increasing obsessive anxiety, had persisted for nearly seven years. It was quite clear that the original concussion was not so severe as to cause permanent organic changes; why, then, did she remain persistently ill? Obviously this illness alarmed her more than any other had done, and what had particularly struck her about it was the failure of memory concentration and general mental capacity.

Further investigation elicited that she thought this might mean insanity; so the fear of mental illness was partly explained, and this was later intensified by the fate of her husband's aunt, but, as is usual in such cases, there were other more important determinants further back in her history. Her sister was in her eyes much more attractive in looks and in every other way. She was gay, a good mixer, and made friends with the greatest ease. The patient was shy, diffident, and had few friends, but she was clever. Her parents always expected her to do well at school work, and she did: intelligence was her one real asset. Actually she became engaged before her sister did, and, although she is an attractive, nice-looking girl, she was sure that it was her mind that had drawn her husband—the one strong emotional attachment of her life—to her side. So if she were to "lose her mind" as the result of this accident all was lost.

This was not all, however; she was emotionally insecure and she feared violent accidents. It may be noted that her husband was far the best person to relieve her of her anxiety if she went out, and he was her one deep emotional episode, as has been said. As she expressed it, her parents had brought up their children to respect them rather than to love them. Her father had been an austere and rigid man, and had died during her childhood without much psychic trauma on her part, since he had never been close to her. Her mother had died of cancer in the patient's early adult life after a painful illness nursed by the patient, whose sister was away from home. The mother's death had been rather a relief, and the patient had maintained herself alone in a flat for two years before her marriage. She had hardly had time to feel seriously lonely, however, since her husband had appeared on the scene not long after her mother's death. She had never known what it was to be enfolded and protected by parental love, and therefore was not well safeguarded against the buffets of fate, but, if these took the form of violent injury, an early experience had intensified the fear.

By far the most vivid memory of childhood was that of air raids and of being wakened in the night, taken downstairs, and told to stay under the dining-room table with her sister while her parents went to the front door to see what was happening. She said that her sister, who was three years younger than herself, did not seem to mind; but she herself was terrified. That it made a deep impression was evident from the fact that it seemed to her that this happened over and over again, whereas from the part of the country where she lived actual raids could not have occurred more than twice. Her parents, however, were very agitated about raids and were always frightened lest they should occur, and their going out to see what was happening, leaving the children to shiver under the table, was not an expression of courage or bravado but of an agitation too great to allow them to stay still.

Such, then, was the background of this case of pathological anxiety—not an unusual or a remarkable case, but one which may serve as a text for a discussion on the genesis of this condition, which may be all too common if the war develops a more active phase.

The Physiology of Anxiety

Anxiety is the emotion engendered by insecurity. It differs from fear in that it is not the response to a sudden actual danger but to a continually present potential danger. The stimulus comes, therefore, almost entirely from fantasy, from the thought of the subject as to what might happen and not directly from what does happen in the environment.

If we are to understand the physiology of anxiety we must first understand the physiology of such an experience as fear. In this case the stimulus arrives through the sensory receptors, let us say the sight of a charging lion. The image of a lion is formulated first in the occipital cortex, but as other association paths are quickly traversed by the impulse which has been set going through the cortex, meaning is attached, danger is recognized, and the well-facilitated pattern of escape is set in action with the accompanying emotion of fear and the motor phenomenon of flight. The latter is activated by means of the motor cortex, but the impulses pass not only forward in the brain to the effector areas responsible for action of voluntary muscles, but also downwards to the thalamus and hypothalamus, where autonomic changes are initiated and endocrine secretion is procured through the controlling medium of the pituitary. Such changes "set" the body for violent muscular effort and provide the necessary chemical changes to maintain this. The resultant sensory pattern, returned, as it were, to the cortex and so to consciousness by these autonomic and chemical changes, constitutes what we experience as emotion—in this case the emotion of fear.

We know that sympatheticotonic activity and excess of adrenaline are associated with fear; the emotional pattern might, therefore, be described in terms of an equation involving sympathetic +, vagal −, and endocrine (adrenaline +) values. As yet, however, we cannot get very far in writing such an equation, since the equation for anger must also be sympathetic +, vagal −, and endocrine (adrenaline +); but fear is quite distinct and different from anger. Still, for fear the process is: environmental danger→cortical perception→thalamic and hypothalamic activity→autonomic and endocrine pattern set in motion →return cortical perception of this, which is the conscious experience of fear. This will persist just so long as environmental danger persists, but when it stops fear stops. Motor activity by removing the subject from danger will hasten the cessation of fear; but if motor activity is prevented—for example, by tying up the subject—the impulse tends to flow more and more through hypothalamic paths with more and more derangement of autonomic and endocrine activity, which may become so intense that functions of the body, including that of the cerebral cortex, are all much upset, with the result that the subject actually loses consciousness. The reactions to environmental danger associated with fear are fairly constant in their form, since the pattern is inherently facilitated, being instinctive and therefore innate. Experience, suggestions, and education will determine which objects or situations act as most effective stimuli, but the pattern "flight-fear" is always there ready to be set going.

The infant at birth can experience fear but probably not anxiety; anxiety requires thought and reflection, at least in their primitive form. The infant may experience anxiety if he thinks the breast is going to be denied him. We do not experience anxiety when we are aware that the lion is there, but only when we think he might be there. The anxiety pattern, then, is not innate but acquired, and therefore is not so set and so facilitated,

Moreover, there is very little if any motor-cortex–voluntary-muscle component, and so the autonomic endocrine activity may be very severely disturbed. It is noticeable, however, that it is not nearly so definitely sympatheticotonic. Vagotonic symptoms (intestinal spasm, diarrhoea, etc.) are often met with, while thyroid overactivity is much more characteristic than adrenaline overactivity. The anxiety equation will read, therefore, sympathetic +, vagal +, endocrine (thyroid +), though again we cannot specify this with any exactitude. Although the anxiety pattern is not innate like the fear pattern, we are all capable of experiencing anxiety, and it may be that in some of us there is an inherent disposition which makes us more liable to anxiety than others; but almost certainly the tendency to anxiety depends much more on early experience. As has been said, anxiety is the emotion that is associated with a feeling of insecurity, and for the infant and young child security depends on the enjoyment of parental and perhaps especially maternal love. If the infant is deprived of parental love he will tend to be anxious, and there is no doubt that the broken or quarrelsome home makes for anxiety in the child. If perfect love casteth out fear, most certainly imperfect love generates anxiety. It is probably true to say that the anxious parent is incapable of perfect love, and undoubtedly his child is most suggestible in respect of anxiety. Such a symptom as enuresis, which in the majority of cases is psychogenic, illustrates this; for the more anxious and fussed the mother the more anxious the child and the more frequent the wet bed.

Basis of Pathological Anxiety

In our case the basis of the subsequent pathological anxiety was laid by the fact that the patient did not enjoy perfect parental love, for her parents wished to be respected above everything. The anxiety was intensified enormously by the suggestion given by the parents' anxiety over air raids, perhaps more than by the actual experience of them, for, as has been said, they were not actually frequent but very rare. It is significant in this case that the more attractive younger sister was the parents' favourite and has not developed a pathological anxiety, so there may also have been the factor that the elder sister's nose was put out of joint by the arrival of the younger, though this did not come out during treatment.

The basis of all neurotic anxiety, then, is deprivation of parental love because the parent (*a*) is not capable of unselfish love for his or her child, or (*b*) is not there to give it, or (*c*) has displaced it partially or wholly on to another child. This may well be intensified by anxiety on the part of the parents, and may do something to determine the nature of the anxiety and its objects. Violent accidents as a cause of anxiety were so determined in our case.

More important, however, in shaping the psychic pattern of the anxiety are the patient's subsequent experience and development. Insecurity will be more readily felt if one single attribute is regarded by the subject as all-important, whether because of its own inherent significance or because the patient regards it as all he or she has got. In our case it was intelligence, but more often it is some physical attribute which brings power to the patient or which he thinks brings him power over his friends or relatives. This attitude may be in reality or fantasy, may be enjoyed or only wished for. The boy may wish for physical strength sufficient to overcome his oppressive father, the daughter may wish for beauty to outshine her mother, and each of them may develop anxiety about anything which threatens to deprive him or her of these desirable attributes. In analysis, given such a situation, it is not difficult to discover early memories related to an Oedipus situation.

Again, where an insecure girl wishes for power over her apparently more secure brothers she may easily feel that she has been deprived of something which they have, and if the power she wishes is sexual then the castration complex situation can easily be discovered. But these are more likely to be "retrojections" of ideas from present experiences than real past experiences. In the boy, ideas of physical or sexual insecurity may easily be associated with anxiety regarding possible impotence. Such anxieties may be attached to masturbation or venereal disease, which may be supposed to determine the impotence.

In other cases the insecurity is social or economic rather than physical or sexual, and the physical pattern is so shaped. Given the tendency to anxiety acquired in early childhood and the general object of anxiety acquired as a rule in adolescence, the actual onset of the pathological anxiety is precipitated by some incident which threatens the cherished attribute of the patient. In our case this was the concussion which threatened the integrity of her mind.

Establishment of the Pathological Condition

Once the anxiety is started its persistence will be determined by the pre-existing sense of security or its absence, and what we may call pathological anxiety will not be established unless the threat to security is continuous and repeated or unless there is a serious predetermined sense of insecurity, initiated as a rule in early childhood.

These two latter factors are generally in inverse proportion—the greater the predetermined sense of insecurity the more trivial need be the precipitating cause; but once the anxiety is established the patient is apt to perpetuate it because any untoward symptom or external event is interpreted as fresh evidence of potential danger. Since the anxiety itself is a source of autonomic dysfunction such symptoms are all too common, and such autonomic dysfunctions are hard to describe, for even the patient's doctor often finds it difficult to explain them to the patient and to reassure him as to their significance or insignificance. This means that these symptoms and feelings are mysterious and so tend to intensify the anxiety.

This was well illustrated by a patient who was recovering from phthisis and developed a pathological anxiety quite unconnected with his lung disease. This was accompanied by marked psychically determined palpitation, which terrified him exceedingly and intensified his conviction that he was on the point of death. As he expressed it, he was never bothered about the tuberculosis—he always knew he would get better of that; but this pounding in his head was more than he could stand: he knew that it would kill him.

The longer the anxiety persists the more does the pattern become set and the more difficult does it become to treat, and such an anxiety pattern is common to many psychotic and psychoneurotic conditions. It may persist in more or less the original form, or the object may be displaced so that a definite phobia or obsession develops. In our patient the fear of insanity was displaced by a fear of death, since the latter was a lesser evil to her; but much more elaborate distortions and displacements occur even to the systems of mental maladjustments of the schizo-

phrenic. So far as treatment is concerned the more complex is the pattern and the longer it has persisted the more difficult will it be to treat, but if it is not too rigid and there is still a possibility of reorientation and reassociation with other mental processes recovery is possible. This is the state of affairs in the psychoneurotic, and by patient treatment of an analytical type, not necessarily by orthodox psycho-analysis, the pattern can be unravelled, the various components separated, and each given its proper value and time relations. In this way the pathological anxiety is resolved and the patient is restored to a reasonable sense of security.

In the psychotic schizophrenic, however, the pattern has, for some reason which is obscure, become extremely rigid and association with other mental processes has become very difficult or impossible; the patient has lost insight, and, having retired from reality into fantasy, is no longer particularly interested in being restored to security in relation to the real world. It would not appear that the explanation of this is wholly to be found in the intensity of the anxiety or the extreme degree of the insecurity; there would seem to be some other factor, possibly chemical, in the sense of cell or synapse integrity, which intervenes, but as to the nature of which we are ignorant. In such "closed" systems, however, psychotherapy is of very little avail, but modern convulsive therapy may afford relief by breaking them up, leaving the patient less anxious and less enclosed in his retreat from reality, but often at least more simple-minded and at a lower level of mental capacity.

Roizin (1939) showed that convulsive therapy produced small areas of cerebral necrosis, and these would interrupt and break up the facilitated "circulation" through the anxiety pattern.

Prevention of Pathological Anxiety

If pathological anxiety is to be prevented the manner in which the pattern is formed is important. At present our concern is with prevention under war conditions, both in the Services and in civil life. Ideally, it might be held, the way to prevent this condition is to exclude all those who owing to unfavourable circumstances in early life are potentially insecure. As a matter of fact, however, this is not only quite impracticable but would unnecessarily exclude a great number of people who could and would perform useful service even in positions of considerable danger. This is because, as we have seen from the example quoted, in the genesis of pathological anxiety not only is there a substratum of insecurity determined in the early years, but there is also a paucity of weapons wherewith the individual can maintain himself in the struggle for existence. The early conditions of our patient and her sister were probably very similar, but the patient later came to depend on her intelligence, and her intelligence alone, whereas her sister had many more strings to her bow. When her intelligence was threatened, then came the persistent anxiety, whereas in the case of her sister quite a lot of attributes would have had to be threatened before her feeling of security in life would have been seriously undermined.

Of course, if it is possible to recognize in time the individual who has been insecure in childhood, and also has in his own eyes too narrow an equipment with which to meet life, that person would be better evacuated from the danger area if he is a civilian or removed from the obligation of active general service if he is a combatant. Only occasionally, however, can such people be recognized in time for complete prevention of breakdown, but after an individual has been subjected to strain, and is clearly showing signs of serious anxiety, his previous reactions to life should be carefully investigated. Not only the competent psychiatrist but also every understanding physician with even a little psychological knowledge will be able to appraise the situation and will see the wisdom of removing such a person as is described above from the strain of a continued feeling of insecurity before he has completely broken down into a useless liability to the nation and later a continuous burden on the taxpayer.

REFERENCE

Roizin, L. (1939). *Riv. Patol. nerv. ment.*, **53**, 491.

MANAGEMENT OF RESPIRATORY DEPRESSION DURING ANAESTHESIA

BY

F. BARNETT MALLINSON, M.R.C.S., L.R.C.P., D.A.

Anaesthetist to Princess Beatrice Hospital, Royal Waterloo Hospital, and Woolwich Memorial Hospital; Honorary Assistant Anaesthetist to the National Dental Hospital

The rapidly increasing use of the intravenously administered "light" barbiturates in modern anaesthesia has brought into greater prominence problems involving respiratory depression. All the barbiturates used in this way are apt to produce respiratory depression, particularly following heavy premedication; but if this disadvantage is realized, and is faced frankly by the modern anaesthetist and countered by appropriate measures, it presents no serious bar to the employment of a technique which is undoubtedly one of the outstanding advances of recent years in anaesthetics.

The barbiturate which seems to be generally acknowledged to produce by far the best results is sodium pentothal (Tovell and Thompson, 1936; Heard, 1936; Murphy, 1936; Mallinson, 1937), but it can also give rise to the most pronounced degree of respiratory depression, especially if not handled by an experienced administrator. Very occasionally—but much less frequently than its predecessor, evipan—pentothal causes severe laryngeal spasm, though this happening is usually due to errors of technique, such as too slow or too rapid a rate of injection. Evipan causes considerably less respiratory depression, but it is definitely inferior to pentothal in its effects and less reliable in its results. What follows here is therefore chiefly concerned with the use of pentothal as the intravenous agent.

Methods of Correcting Respiratory Depression

There are two chief ways to correct respiratory depression severe enough to cause anoxaemia, arising during anaesthesia.

1. STIMULATION OF THE RESPIRATORY CENTRE

This can be done by drugs injected or by carbon dioxide inhaled. The latter is useful in some circumstances and can if necessary be combined with the second method to be described; but it has its contraindications, particularly where the anaesthetic technique includes spinal analgesia (Mallinson, 1938). The most useful and reliable

drug up to date, particularly where barbiturates are concerned, despite the apparently conclusive theoretical arguments cited to prove its chemical and physiological inactivity, seems to be coramine. In practice it can almost be guaranteed to make a patient depressed by a barbiturate wake up enough to require restraint to prevent him falling off the table. It does, however, need to be given in sufficient dosage (5 c.cm. or more) and direct into the circulation. Picrotoxin is another recently suggested drug which has been used, especially in barbiturate poisoning (suicidal, etc.). It is stated to be a highly efficient cerebral and medullary stimulant in addition to its effect as an antagonist to barbiturate action (Kohn, Platt, and Saltmann, 1938). Not enough is as yet known about it to make any definite assessment of its place in anaesthetics. A number of other drugs, such as metrazol and cardiazol, are also used, but they do not appear to be as effective as coramine.

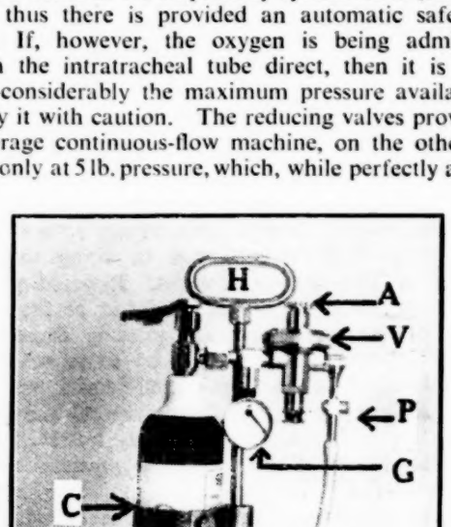
As a rule such drastic measures as those outlined above are not necessary.

2. INFLATING THE LUNGS WITH OXYGEN

Inflation a few times is all that should be necessary in the vast majority of cases unless a severe overdose of the barbiturate has been given. A source of oxygen under controlled pressure should always be available during the administration of an anaesthetic. It is now well understood that its presence is absolutely essential for safety when intravenous barbiturates are being used (Jarman and Abel, 1936 ; Jarman, 1939 ; Mallinson, 1937). Furthermore, it provides complete immunity from the dire effects of uncorrected respiratory depression, whatever the anaesthetic may be. It should be emphasized that "presence of oxygen under pressure" implies more than that it should be somewhere in the building: it must be literally *at hand*. It was with this in mind that the machine described below was designed.

The emergency oxygen button of a McKesson anaesthetic machine provides an ideal example of oxygen under controlled pressure, instantly available, and in hospital work, where the patient is usually anaesthetized in the theatre unit itself, is all that is needed. In nursing-home practice, however, conditions are apt to be very different. Most patients in these circumstances now expect to be rendered oblivious of all subsequent proceedings as rapidly as possible and before leaving their beds. A pentothal induction, for example, is ideal for this purpose, or avertin may have been ordered ; but often it so happens that a maze of corridors and several floors separate the patient's room from the operating theatre. Sometimes the situation is rendered even more trying by the absence of a lift. In any case a somewhat anxious interval is liable to occur, starting after the induction and lasting throughout the journey along corridors and up or down in lifts till the operating theatre is reached, where the anaesthetist's McKesson has been set up. It is obviously impossible for even the most portable type of McKesson to accompany the patient on this journey, but an apparatus which embodies the principle of the direct oxygen supply found on that machine and without the anaesthetic parts of it solves the difficulty, and can be made quite light and portable.

The apparatus Messrs. A. Charles King have made for me (see Fig.) is of such a nature. It consists of a light wood and aluminium base on which is mounted a single thirty-gallon oxygen cylinder (C). Attached to this is a special type of reducing valve (V) having an adjustment (A) whereby the pressure reduction from the cylinder pressure of 1,800 lb. per square inch can be varied from 5 lb. to 30 lb. per square inch. The maximum pressure obtainable from the emergency button of a McKesson is 60 lb. per square inch, and in practice even this is found to be perfectly safe when applied through a face-piece, because the face-piece will be lifted off the patient's nose and mouth by the pressure of the gas long before any harm can come to the respiratory system itself (McKesson, 1926) ; thus there is provided an automatic safety-valve action. If, however, the oxygen is being administered through the intratracheal tube direct, then it is wise to reduce considerably the maximum pressure available and to apply it with caution. The reducing valves provided on the average continuous-flow machine, on the other hand, deliver only at 5 lb. pressure, which, while perfectly adequate



C = Cylinder. V = Valve. A = Adjustment. G = Gauge. P = Press-key. H = Handle.

when working through an intratracheal tube where there is an absolutely clear and unobstructed airway, may become quite insufficient to inflate the lungs through a face-piece in the presence of any perceptible degree of obstruction, and even when supplemented by squeezing the bag of the machine is totally useless in the presence of such obstruction as is produced by laryngeal spasm—and the manœuvre usually ends in the bag coming off the machine!

A gauge (G) shows the pressure in the cylinder, and hence provides a reliable indication of its contents ; this is of considerable importance to the anaesthetist if he is to avoid being let down in an emergency by an almost empty cylinder. The apparatus is worked by a press-key (P) which allows oxygen to flow at the previously determined pressure only when it is held depressed. The oxygen is led thence through strong rubber tubing to the face-piece, which when not in use is held in a socket attached to the stand. A carrying handle (H) is provided, and the whole machine is protected by a canvas overall, thus making a small and compact little unit. The weight of the apparatus, including full cylinder (thirty-gallon), is approximately 14 lb. A fifteen-gallon cylinder can be used: it provides enough gas and considerably reduces the total weight ; but this size is apparently not being made now for some obscure reason and is increasingly difficult to obtain. Alternatively, one of the new light metal cylinders can be fitted if expense is no object. The

over-all measurements (with thirty-gallon cylinder) are as follows: height, 19 inches; breadth, 9 inches; depth, 6 inches.

The Machine in Use

The compactness and lightness of the machine enable it to be carried with ease to the patient's room and placed alongside him on the locker or bedside table. After the patient is asleep and on the journey to the theatre the anaesthetist can take the apparatus along with him without being incommoded by a weighty and cumbersome anaesthetic machine, and with the comfortable feeling that should undue respiratory depression manifest itself during the journey it can be rapidly and easily countered on the spot. Should this need arise, the supply cock on the cylinder having been turned on, the face-piece is detached from its socket and applied to the patient's face firmly but without undue pressure. Next the control key is pressed for a second or two and then released, exactly as is the emergency button on a McKesson. By this means an artificial inspiration is produced and the lungs are inflated with oxygen. The face-piece is then lifted slightly and a natural expiration takes place. This manœuvre is repeated as often as is necessary at regularly spaced intervals of a few seconds each. As a rule two or three insufflations are all that is needed before every trace of cyanosis disappears and normal colour and function are restored.

The above apparatus is also very useful, and all that is required to be taken along, when a pure pentothal anaesthesia is decided upon, which nowadays seems to be the case on an increasing number of occasions. For such an anaesthesia a complex apparatus for the administration of nitrous oxide, ether, cyclopropane, etc., is unnecessary, and can safely be left in the car, thus avoiding the trouble and exertion inseparable from carting into the nursing home and setting up heavy anaesthetic machinery suitable for the administration of an inhalation anaesthetic. This question assumes really major importance in the absence of porters (which seems to be a regrettably frequent occurrence), especially if the day be hot and the anaesthetist late!

Conclusions

Pentothal is now generally agreed to be without appreciable effect on the heart (Mallinson, 1937; Pratt and others). Some workers, it is true, have described occasional irregularities on electrocardiographic investigation which do not appear to be of any great significance (Kohn and Lederer, 1938). Others, however, do not confirm this finding (Volpitto and Marangoni, 1938). The drug is nevertheless capable of producing considerable respiratory depression, especially after heavy premedication or excessive dosage; but it is only when the means to correct the resulting anoxaemia promptly and adequately are lacking that respiratory depression may bring in its train myocardial damage and cardiac failure, with the resultant collapse of the patient and all its attendant perils. If such means are at hand, and, what is more, in a form sufficiently light and easy to carry about, little fear of any major respiratory complication arising during anaesthesia need be felt.

Statistics with regard to intravenous anaesthesia now exceed 8,000,000 administrations (Jarman, 1939), and tend to show that this type of anaesthesia compares favourably with any other form, with the possible exception of gas-and-oxygen, in respect of mortality.

Finally it is claimed that the constant presence of a source of oxygen under controlled pressure during intravenous narcosis materially adds to the already excellent margin of safety possessed by this type of anaesthetic.

REFERENCES

Heard, K. M. (1936). *Canad. med. Ass. J.*, **34**, 628.
Jarman, R. (1939). *Brit. J. Anaesth.*, **16**, 100.
—— and Abel, A. L. (1936). *Lancet*, **1**, 422.
Kohn, R., and Lederer, L. (1938). *J. Lab. clin. Med.*, **23**, 717.
—— Platt, S. S., and Saltman, S. Y. (1938). *J. Amer. med. Ass.*, **111**, 387.
McKesson, E. I. (1926). *British Medical Journal*, **2**, 1113.
Mallinson, F. Barnett (1937). *Lancet*, **2**, 1070.
—— (1938). *Brit. J. Anaesth.*, **16**, 22.
Murphy, O. J. (1936). *British Medical Journal*, **2**, 1308.
Pratt, T. W., Tatum, A. L., Hathaway, H. R., and Waters, R. M. Unpublished communication to Messrs. Abbott Laboratories: "Sodium Ethyl Thiobarbiturate."
Tovell, R. M., and Thompson, G. J. (1936). *J. Urol.*, **36**, 81.
Volpitto, P. P., and Marangoni, B. A. (1938). *J. Lab. clin. Med.*, **23**, 575.

THE VALUE OF INBRED MICE IN RELATION TO THE GENERAL STUDY OF MAMMARY CANCER

BY

GEORGIANA M. BONSER, M.D.

Brotherton Fellow, Department of Experimental Pathology and Cancer Research, University of Leeds

Much progress has been made in recent years in the elucidation of the mechanisms involved in the origin of mammary cancer. This is due largely to the availability of a number of inbred strains of mice in which the females exhibit a high tendency to the spontaneous development of this type of cancer. The value of such animals to the experimentalist lies in their short life-span and in the ease with which a large number of tumour-bearing animals can be obtained. Provided there is good evidence that the processes concerned with the high incidence of mammary cancer in these mice represent only an exaggerated form of the processes operating in widely outbred mice (which are comparable with human stock), then it is permissible to apply the results of such studies to the elucidation of the problem in the human subject.

Varying opinions have been expressed as to the relation between genetically pure strains and outbred mice. Cramer and Horning (1937) state that "there may be differences between the aetiology of mammary cancer in mice of mixed strains and those of specially inbred strains with an inherited high susceptibility to mammary cancer." The basis for this suggestion is their opinion that in outbred mice the condition is a local disease curable by operation, whereas in inbred mice it is a general disease with local manifestations and cannot be cured by operation. Gye (1937) supports this view and states that conclusions drawn from observations on inbred mice cannot be applied without reserve to cancer in normal mixed stocks.

Sampson Handley (1938) reported the history of a family of five sisters with a strong predisposition to breast cancer; three of them suffered from double primary carcinoma of the breast. He suggests that the history of this family recalls the high incidence of breast cancer in certain inbred strains of mice, and shows that surgical treatment was of value in spite of the strong constitutional predisposition. He also states that in his experience double primary breast carcinoma in the human being is not confined to cases in which the family predisposition is especially strong.

Description of the Experiment

In view of the importance of this aspect of breast cancer an experiment was undertaken in which a comparison was made of the after-histories of outbred stock mice and mice of highly susceptible inbred strains following the surgical removal of a breast cancer. Twenty-eight hybrid mice were obtained from dealers and each bore one or more mammary adenocarcinomas, of which the diagnosis was confirmed microscopically. An undertaking was obtained that the mice had not been specially bred with a view to increasing the incidence of breast cancers. The coat colours varied and the ages were not known, but it was estimated that all were fully grown. Twenty-four tumour-bearing mice from inbred susceptible strains at present maintained in this laboratory were also available. The ages ranged from 27 to 85 weeks. Surgical removal of the tumours was performed and all the mice were observed until death.

Results of the Experiment

A comparison of the results in the two groups of mice is rendered difficult for two reasons. The post-operative survival of the outbred mice was rather shorter than that of the inbred mice (Table I). Especially did a greater

TABLE I.—*Distribution of the Mice according to the Week of Death following Operation*

		Interval between Operation and Death in Weeks						Average Interval between Operation and Death, in Weeks
		5 or under	6–10	11–15	16–20	21–25	26–30	
Number of mice dying	Inbred	6	1	8	3	3	3	14.4
	Outbred	3	11	8	0	5	1	12.2

proportion of outbred mice die before the expiration of the tenth week after the operation, after which time at least half of the tumours in both groups appeared; therefore their opportunity to develop a second tumour was not quite so good as in the inbred group. Four of the outbred mice bore two or more tumours at the time of operation, whereas only one inbred mouse bore two tumours. This is probably due to the fact that a weekly inspection of the inbred stock is made and tumours are discovered early, while dealers only inspect their stock with a view to discovering tumours when a special demand is made. These mice with two or more tumours at the time of operation are included in the group developing second tumours because it has been found that tumours in two sites rarely occur simultaneously, and had the mice been subjected to operation earlier the second tumour would have developed after operation.

The results of the experiment are given in Table II. Local recurrence after operation occurred with approximately the same frequency in the two groups. Second tumours—that is, another breast cancer at a site removed from the primary site—appeared in 66.7 per cent. of inbred mice and 35.7 per cent. of outbred mice. This difference is sufficiently great to be of statistical significance. In both inbred and outbred groups were examples of individuals developing two, three, and four breast tumours.

TABLE II.—*Development of a Second Tumour after the Surgical Removal of a Primary Tumour*

Type of Mouse	Total Mice in Experiment	Recurrence at Same Site after Operation		Development of Second Tumours†		Number of Mice Bearing:		
		No.	Per cent.	No.	Per cent.	Two tumours	Three tumours	Four tumours
Inbred	24*	6	25.0	16	66.7	7	6	3
Outbred	28	8	28.6	10	35.7	7	2	1

* The inbred mice belonged to three strains: white label (Kreyberg), 5 mice; RIII (Dobrovolskaïa-Zavadskaïa), 14 mice; Bagg albino (Little), 5 mice.
† Includes mice which bore two or more tumours at the time of operation.

Discussion

The numbers of mice used in this experiment are necessarily small, but it is shown that outbred mice, while possessing a less marked tendency to develop multiple breast tumours than inbred mice, nevertheless do develop more than one tumour in approximately one-third of cases. Outbred mice, like those inbred, may bear one, two, three, or even four mammary tumours. These facts would appear to support the view that the differences between outbred and inbred mice are of a quantitative rather than of a qualitative order. This would be in accord with genetic experience that inbreeding in itself exerts no harmful influence on a stock, but tends to exaggerate certain characteristics which, if of a harmful nature, may in the long run adversely affect the stock.

Summary

The question of the desirability of using highly susceptible inbred strains of mice for the experimental elucidation of the problems of breast cancer is discussed.

An experiment undertaken to discover whether outbred differ from inbred mice in their tendency to develop mammary cancer in other sites after the surgical removal of a primary mammary cancer is described.

The results of the experiment suggest that the difference is a quantitative rather than a qualitative one, and that the high degree of susceptibility of inbred strains to breast cancer is merely an exaggeration of the disease as it appears in outbred mice.

REFERENCES

Cramer, W., and Horning, E. S. (1937). *J. Path. Bact.*, **44**, 633.
Gye, W. E. (1937). Thirty-fifth Annual Report of Imperial Cancer Research Fund, London, p. 16.
Handley, W. Sampson (1938). *British Medical Journal*, **2**, 113.

As already mentioned in these columns, the American Academy of Arts, in compliance with the provisions of the will of the late Francis Amory, announces a prize, to be known as the Francis Amory Septennial Prize, to be awarded for conspicuously meritorious work performed "during the immediately preceding septennial period, through experiment, study, or otherwise, in the treatment and cure of diseases and derangement of the human sexual generative organs in general, and more especially for the cure, prevention, or relief of the retention of urine, cystitis, prostatitis, etc." While the donor wished especially to reward the discovery of any new method of treatment, he expressly authorized that the prize might be given to any author who might have contributed a theoretical or practical treatise of exceptional value and merit on the anatomy or the treatment of diseases of the genital organs. If there is work of a quality to warrant it the first award will be made this year. The total amount will exceed 10,000 dollars, which may be divided at the discretion of the Academy among several nominees. While formal nominations are not expected and no essays or treatises in direct competition for the prize are desired, the Amory Fund Committee invites suggestions, which should reach it not later than May 15, 1940, and should be sent care of the American Academy of Arts and Sciences, 28, Newbury Street, Boston, Massachusetts, U.S.A.

QUINTUPLETS

RECORD OF A PREMATURE DELIVERY

BY

R. K. RAU, F.R.C.S.Ed.
Professor of Anatomy

A. A. AIYAR, B.A., M.B., B.S.
Department of Anatomy

AND

T. V. MATHEW, B.A., M.B., B.S.
Department of Anatomy

(From the Medical College, Vizagapatam)

It is presumed that no apologies are needed for this paper, wherein a descriptive account of a case of quintuplet birth is given, since the incidence of the phenomenon is extremely rare, the condition is of perennial interest, and the aetiology is a fertile source of ingenious speculation and hypothesis.

The "quins" were prematurely born to a Hindu multiparous woman (six-para) about 30 years of age, belonging to the lower middle classes at Tuni, a town in the East Godavari district of the Madras province, in July, 1939. She seems to have sought admission in the hospital for women and children at Tuni for an unusually big abdominal tumour. The case was presumably diagnosed as pregnancy complicated by polyhydramnios. Premature delivery occurred during the sixth month. Dr. S. T. Stephen, the medical officer attached to the hospital, conducted the labour. The case should surely have proved a surprise to the lady doctor, who deserves congratulations on having secured the consent of the mother and other relatives to retain the rare and interesting specimen of the quintuplets, which are said to have shown signs of life at birth, but which unfortunately all died soon after. This uncommon incident attracted the attention of the residents of the town and neighbouring villages. An enterprising journalist had the birth published in the popular Telugu daily, the *Andhra Patrika*, along with a photograph of the quintuplets, with a view to authenticating the report. Lieutenant-Colonel Alagappan, the district medical officer, advised Dr. Stephen to present the specimen to the Medical College, Vizagapatam, to which he rightly thought it would prove a valuable acquisition. The offer was readily and enthusiastically accepted by Major Shepherd, principal of the college, who in turn was pleased to give the specimen to the department of anatomy on August 5. It has since been suitably mounted, and is now on exhibit in the museum of the department of anatomy, Medical College, Vizagapatam.

Description of Foetuses and Placenta

The specimen consists of five separate foetuses of about the same size with slight individual variations and of the same sex (all females), having five separate umbilical cords attached to a single fairly big placenta. The foetuses are all normally formed; the limbs are flexed in the usual intra-uterine position. The necks are slightly extended. The skin is of a light yellow hue mottled with patches of discoloration here and there. Subcutaneous fat has not formed. The cutaneous blood vessels are discernible through the integument. The skin is shrunken and wrinkled, owing perhaps to prolonged immersion in spirit and to the absence of subcutaneous fat. The pilary system is just appearing. Fine vellus (wool, down, lanugo, or fuzz) is distinct on the scalp and on the face. On the trunk and limbs the hairs are seen under a hand lens as discrete punctate black dots, similar to those observed after a shave. Flumina pilorum cannot be made out on the trunk and limbs owing to shortness of the hair. Dermal papillae (epidermal ridges) are present on the palms of the hands and soles of the feet. The nails are clearly discerned, and in some toes project even beyond the tips. The eyelids are fused. The pinnae are well formed and present the characteristic scroll-like appearance seen in the adult. The areas of the frontal fontanelles are depressed and sunken. The cast of countenance may be described as plain and coarse owing to the broad nose and big mouth. The tips of the tongue are shown.

A careful examination was made with a view to determining if there were any signs of fusion of several separate placentae. There are no such indications: the placenta is definitely a single mass. The periphery shows a thick membrane resembling the dura mater in appearance, thickness, and consistence. This obviously is the single chorionic investment common to all the five foetuses. The amniotic sac, however, is multilocular. Five separate sacs can be made out. The septum between the adjacent sacs consists of two layers which admit of separation by gentle manipulation. The placenta is thinner in the middle than at the edges, probably owing to the dropping away of a few cotyledons from the central portion during process of handling. There are distinct anastomoses between the vessels of the five cords. The marginal sinus is seen only in a part of the circumference. The sites of implantation of the five cords in the placenta are best expressed in terms of the numerals on the dial of a clock. With the cord of foetus A at the 12 o'clock position, the attachments of the cords of foetuses B, C, D, and E correspond very nearly to the 2.30, 3.30, 6, and 9 o'clock positions (Fig. 1).

FIG. 1.

Measurements of the Foetuses

Foetus	Crown-Rump Length	Maximum Head Length	Maximum Head Width	Remarks
A	14.4 cm.	5.3 cm.	3.9 cm.	Head slightly distorted
B	13.4 cm.	5.2 cm.	4.1 cm.	
C	14.05 cm.	5.2 cm.	4.2 cm.	
D	14.0 cm.	5.2 cm.	4.1 cm.	
E	14.3 cm.	5.1 cm.	4.2 cm.	

The crown-heel length could not be measured accurately as the limbs were fixed in the flexed position and could not be extended without injury to the specimen. Separate measurements had therefore to be taken of the segments of the flexed lower limbs of the foetuses. The approximate crown-heel length of the foetuses may be put down as 21 to 22 cm. The

lengths of the umbilical cords vary from 20 to 25 cm. The total weight of the five foetuses together, exclusive of the placenta, is about 930 grammes, giving an average of 186 grammes each. But all the foetuses are not exactly equal in size. Their sizes in descending order of magnitude are A, C, D, E, B (Fig. 2). The specimen comprises intact all the five foetuses connected to a single placenta by the five umbilical cords.

FIG. 2.

Frequency and Aetiology of Quintuplet Births

The total number of quintuplet births on record is about thirty. The incidence of quins, according to Guzzoni, is about one in 41,600,000 labours. It can therefore be seen that the incidence is very rare. Multiparity has been mentioned as a predisposing causative factor of multiple pregnancies in general: the mother of the quins under reference is a six-para, and thereby confirms the observation. Multiple pregnancy has been observed to be commonest between the ages of 25 and 29. The age of the mother in this case is given as about 30, but is not definitely known. It has often been remarked that the rice-eating people of the Tropics are more fertile and fecund than inhabitants of other parts of the world. India and China are two countries usually cited as evidence of this; accordingly multiple births should occur more often there. It is difficult to dogmatize in the absence of definite facts and figures; and there is besides the ever-elusive and baffling hereditary factor. No details regarding the genealogy of the mother of these quins are available.

Discussion

In cases of multiple pregnancy the size of one foetus out of the many can by no means be taken as a criterion for the determination of age. Taking the other physical findings in conjunction, such as the commencing pilary system, non-appearance of the subcutaneous fat, growth of nails, identifiability of sex, fusion of the eyelids, etc., the age of the foetuses may be estimated as somewhere between the fifth and sixth months of intra-uterine life.

To the question whether the foetuses are uni-ovular or multi-ovular it may be confidently answered that the single placenta, the single chorion, the uniformity of sex, and extensive vascular anastomoses between the vessels of the cords lead us to the inference that these quins are uni-ovular, other synonymous terms being monozygotic, identical, monochorionic, and homologous. Quintuplets are said to develop probably, with rare exceptions, from more than one ovum. This particular case may be taken to be one such rare exception. Multiple pregnancy may result from the fertilization of several separate mature ova during the same menstrual cycle. The foetuses in such cases may not be of the same sex, size, and appearance; they are fraternal foetuses comparable to brothers and sisters in a family. On the other hand, multiplicity may be caused by the complete division of one single fertilized ovum into two or more embryos, each embryo being endowed with the capability of full and normal development and each containing the same number of chromosomes with all the chromosomal characters and potentialities. The factor or factors which cause the splitting and division of the fertilized ovum into several embryos are not known. The constant occurrence of identical quadruplets in the American armadillo (family Dasypodidae) is said to be due to temporary failure of nutrition during the critical stage of implantation of the ova in the uterine wall. We do not, however, propose to enter into a detailed discussion on the many and various complicated and abstruse factors, external and internal, which culminate in the division of one mature ovum into many. We would like, however, to add a word by way of explanation of how the odd number of five is arrived at. It has to be assumed that the first stage in the process consists in the division of one into two, that during the second stage the two further divide into four, and that during the terminal phase only one of the four undergoes a still further subdivision into two, thereby resulting in a total of five. In this particular case foetuses A, D, and E may be taken to represent three of the four resulting from the second division, and that foetuses B and C probably represent the twinning brought about by the further division of the remaining one of the four.

Summary and Conclusions

A short descriptive account of quintuplets prematurely born during the sixth month of pregnancy is given. Arguments in favour of the identical or uni-ovular nature of the quintuplets are adduced. Statistics are given to show that the incidence of the condition is very rare. The aetiology of multiple pregnancies is also briefly discussed. Two photographs, one taken before and the other after mounting, are reproduced.

We have much pleasure in acknowledging our indebtedness to Dr. S. T. Stephen, who first conducted the labour and secured the specimen; to Lieutenant-Colonel S. C. Alagappan, I.M.S., D.M.O., East Godavari, for having presented it to the Medical College, Vizagapatam; and finally to Major J. F. Shepherd, I.M.S., principal of the college, for having handed it to the department of anatomy.

"Aculene" from Matricaria.—The essential oil of the so-called German chamomile contains a fraction which has a strongly protective action in a number of inflammatory processes—for example, the mustard-oil chemosis of the rabbit's eye and the insolation erythema of human skin. The fraction contains a hydrocarbon of dark blue colour, to which the name "aculene" is given.—Antiphlogistic Action of "Aculene" from *Matricaria chamomilla.* W. Heubner and W. Albath.—*Arch. exp. Path. Pharmak.*, June 3, 1939, **192**, 383.

Clinical Memoranda

Dislocations of the Carpal Lunate

An open operation is occasionally performed for the purpose of reducing or even excising the lunate in obstinate or long-standing dislocations. Several cases which have defied the usual manipulations and persuasions have been successfully reduced, without recourse to the knife, by the following method. A brief description may therefore be of interest.

The reason for failure is most clearly demonstrated when operation is undertaken for the purpose of reduction. It will be seen that the capitate occupies the "socket" between the scaphoid and the triquetrum from which the lunate has been extruded. In the most complete dislocations, especially if there is a coexistent fracture of the scaphoid, the capitate lies right up against the articular surface of the radius. Add to this the varying

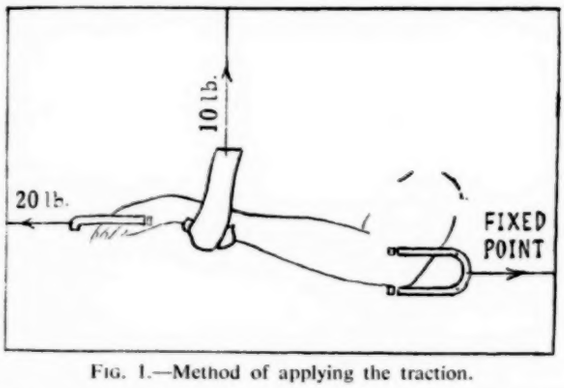


FIG. 1.—Method of applying the traction.

time factor in which through days, weeks, or even months this altered anatomy becomes set by an organizing traumatic effusion, and the difficulties of manual reduction will be easily visualized. Yet in such a case one has seen relays of almost violent efforts to reduce this dislocation result only in damage to some of the important structures surrounding the wrist-joint.

It is quite apparent that the usurping capitate must be withdrawn from the proximal row of carpals before the lunate can be returned to its rightful position. Böhler has emphasized the importance of slow axis traction to effect this purpose. The point, however, that has not been sufficiently stressed is that continuous traction must be maintained for quite a considerable time—up to three days in long-standing cases. If, therefore, reduction fails after ten minutes' traction on the fingers and the usual manipulations, or if the dislocation is an old one, the following method is strongly recommended.

DESCRIPTION OF METHOD

Kirschner wires are inserted through the heads of the metacarpals and through the olecranon process. It is perhaps worthy of note that the former procedure requires some practice, as the metacarpals do not all lie on the same plane. This will be greatly facilitated if the hand is held flat on a small table so that the radial side lies at the edge. The drilling is started from that side, with the invaluable aid of a Kirschner wire guide. If the patient is returned to a bed which has already been fitted with the necessary apparatus, attaching and adjusting the tension cord to the Kirschner "horseshoes" takes only a few minutes. A detailed description of the arrangement of weights and pulleys is unnecessary, as Fig. 1 indicates the essential points. The Kirschner wire at the elbow is attached to a fixed point at the head of the bed, while extension through the metacarpals is applied by weight and pulley at the foot of the bed. A pad is placed under the lunate, through which, by means of a canvas or leather sling, continuous pressure of 10 lb. is maintained. Up to 20 lb. has been used to obtain the axis traction, and up to 10 lb. to produce the upward pull through the pad. The patient does not as a rule experience much pain, but it is advisable to give a sedative mixture or injection at regular intervals. *X*-ray films are taken every three to four hours.

It is interesting to watch the gap between the radius and capitate gradually opening up until the lunate slips into place (Fig. 2). The time taken for this to occur has varied between five and fifty hours. Spontaneous reduction has occurred in all but one case, and in this dislocation, which was over two months old, very little manipulation was required to complete reduction after forty-eight hours' traction.

As soon as the film shows that the lunate is in its normal position the extension is considerably reduced and a plaster cast applied in the usual way. A further film is taken to confirm the position before the wires are removed. No harm has been seen to result from wiring the metacarpals. In an uncomplicated case active movements are begun immediately, and the plaster is removed in three weeks. If the scaphoid is fractured also, the immobilization will depend on the progress of union. As a rule any displacement at the scaphoid fracture is corrected at the same time as the lunate dislocation.

The end-result is infinitely more satisfactory than the weakened hand which follows removal of this bone. Also it is perhaps not out of place to repeat the fairly common experience that operative intervention in fractures involving joints and in dislocations frequently gives a much less satisfactory functional result than the pleasing anatomical reduction would seem to deserve. In eight cases of the type described this method has been successful where operative reduction would probably have had to be undertaken.

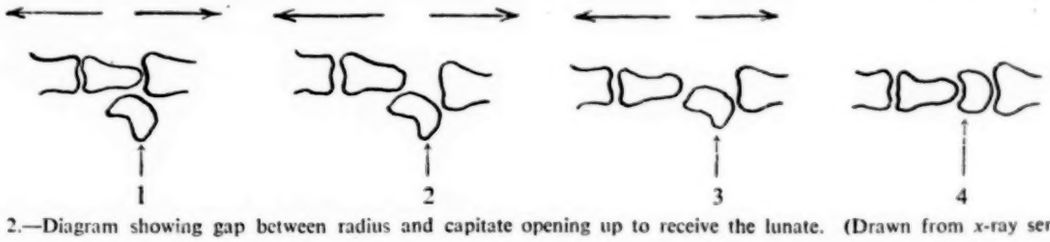


FIG. 2.—Diagram showing gap between radius and capitate opening up to receive the lunate. (Drawn from *x*-ray series.)

In conclusion, it is urged that operation should be avoided in difficult cases of this carpal dislocation until such a method of continuous traction has been tried.

D. LANG STEVENSON, F.R.C.S.ED.
Resident Surgical Officer, Smithdown Road Hospital, Liverpool.

Perinephric Inflammation.—An abscess anterior to the kidney is comparatively rare. The authors discuss the special features of these cases. Details of treatment are given, and clinical notes on a series of cases are appended.—Perinephric Inflammation Anterior to Kidney. Vergoz and Lenck.—*J. Urol. méd. chir.*, May, 1939, **47**, 369.

Reviews

BRUCELLA INFECTIONS

Brucellosis in Man and Animals. By I. Forest Huddleson, D.V.M., M.S., Ph.D. Contributing authors: A. V. Hardy, M.S., M.D., Dr.P.H., J. E. Debono, M.D., M.R.C.P., and Ward Giltner, D.V.M., M.S., Dr.P.H. (Pp. 340. 3.50 dollars; 19s. net.) New York: The Commonwealth Fund; London: Oxford University Press. 1939.

No one who has followed the work carried out during the past decade or so by Dr. Huddleson and his associates at Michigan will fail to be interested in the announcement of his new publication entitled *Brucellosis in Man and Animals*. Many will remember his previous monograph, *Brucella Infections in Animals and Man*, published about five years ago. The present volume is a revised and amplified edition of the earlier one, inferior to it only in the title, which substitutes the uncomely word "brucellosis" for the more pleasing expression "brucella infections." Most of the contents are written by Dr. Huddleson himself, but sections of some length on the epidemiology, clinical manifestations, diagnosis, and treatment of undulant fever in the United States and in Malta are contributed by Dr. A. V. Hardy and Dr. J. E. Debono respectively, while Dr. Ward Giltner deals shortly with the control of brucella infections in animals.

To the bacteriologist this volume is of considerable value in describing for him in detail the numerous laboratory procedures that are now employed in the differentiation of the *Brucella* group, in the diagnosis of undulant fever by blood culture, agglutination, skin sensitivity, and opsonocytophagic tests, and in the preparation and standardization of such substances as brucellin and brucellergen. Attention is drawn to the value of bactotryptose broth for the rapid isolation of brucella from infectious material, and to the desirability of incubating culture media inoculated with *blood* in an atmosphere containing 25 per cent. instead of the usual 10 per cent. CO_2. In undulant fever a slight leucopenia is said to be the rule, accompanied by a relative lymphocytosis. The lymphocytes, however, are often of a peculiar type, resembling small lymphocytes in the proportions of nucleus and cytoplasm, but being considerably larger in diameter.

The clinician will find an excellent description of undulant fever. In children the disease is often difficult to diagnose, but it is stated that the constant symptoms are lassitude, fatigue, weakness, and anorexia, and the constant signs intermittent fever, sweating, and loss of weight. Both in children and in adults the agglutination reaction may be negative, and laboratory diagnosis is recommended on a basis of skin sensitivity and opsonocytophagic tests. For treatment intradermal and intramuscular injection with suitably graded doses of brucellin is advised; but satisfactory results can be expected only in patients with a sufficient degree of sensitivity to respond by a brisk systemic reaction. Nothing is said about sulphanilamide, partly, perhaps, because its use has been too recent to enable the authors to give it a fair trial themselves, and partly because the observations that have been made so far on man and animals do not appear very promising.

Undulant fever in all its pleomorphic manifestations is probably very much commoner than is usually imagined. It has been studied more intensively in the United States than in Great Britain, and recent surveys undertaken with the special object of ascertaining its frequency have brought to light a great many cases of chronic joint disease, as well as of simple debility and neurasthenia, which have been shown to be due to infection with organisms of the *Brucella* group. The present volume, which is full of important information, will amply repay study by all medical men interested in the prevalence of bacterial infections, and should go a long way towards familiarizing them with the symptomatology, diagnosis, and treatment of a disease which is at present far too frequently overlooked.

UPPER RESPIRATORY TUBERCULOSIS

Tuberculosis of the Upper Respiratory Tracts. By F. C. Ormerod, M.D., F.R.C.S. (Pp. 216; 55 illustrations, 31 of them in colour. 21s. net.) London: John Bale Medical Publications. 1939.

Tuberculosis of the upper respiratory tract—the larynx, the pharynx, the trachea and bronchi, the nose, nasal accessory sinuses, and ear—is an important subject which until now has lacked sufficient attention as a whole. Tuberculosis of the larynx is well known as a common complication of pulmonary tuberculosis: putting it at a low computation, it is calculated that there are over 60,000 cases of tuberculosis of the larynx in England and Wales to-day, and of 17,000 patients referred to the throat department at the Brompton Hospital in fifteen years 3,120 were found to be suffering from tuberculous laryngitis. Lupus of the pharynx and nose is not uncommon, but chronic ulcerating tuberculosis of the pharynx is a complication of pulmonary tuberculosis that is not very frequent: in fifteen years at the Brompton Hospital fifty-six cases were seen in the throat department. The trachea and bronchi are infected by tuberculosis to a greater extent than is often suspected during the routine examination of the patient, and, although such a complication of lung disease is serious, it is far from hopeless and should be given the benefit of modern methods of treatment, such as by means of the bronchoscope. Tuberculosis of the oesophagus is apparently infrequent and usually found in very advanced pulmonary disease, so that little can be done for it except by way of palliation. Tuberculosis of the ear is rare except in the case of young children who are fed on milk with a high degree of tuberculous infection, but such cases are less common than they were in some districts (for example, Edinburgh) thirty years ago, owing to the improvement in the condition of the milk supply: at the Brompton Hospital throat and ear department 371 cases of chronic suppurative otitis media were seen in fifteen years (in 17,000 cases referred to the department), and of these 111 were cases of tuberculous otitis media.

In addition to his wide experience at the Brompton Hospital Mr. Ormerod has obviously made a thorough study of the literature of the subject before writing his monograph. The book is divided into four main sections and subdivided into twenty-one chapters, each section being introduced by a brief historical note and each chapter ended by a full list of references. The illustrations are very good, though not numbered (except, for some curious reason, in three instances), the colour paintings by Mr. Denis Mathews being particularly noteworthy. A monograph like this, modest in tone, clearly written, based on extensive personal experience and thorough knowlege of the literature, comprehensive in scope yet not unnecessarily wordy, well arranged and excellently illustrated, does more for the advance of a department of medicine than half a dozen textbooks.

NEW WAYS IN PSYCHO-ANALYSIS

New Ways in Psychoanalysis. By Karen Horney, M.D. (Pp. 313. 12s. 6d. net.) London: Kegan Paul, Trench, Trubner and Co. 1939.

Some years ago the reviewer in private conversation made a rash prophecy—namely, that when the jubilee of the birth of psycho-analysis came to be celebrated every psychiatrist would acknowledge that it was the genius of Freud which had made practically all the advances of modern psychiatry possible, but that not one of the theoretical formulations laid down by him would have survived in anything like its original form. If the new ways in psycho-analysis described by Dr. Horney were to be taken as representative of modern thought that prophecy would already have been fulfilled. This book will therefore be anathema to the diehards of the original teaching, for in a series of chapters Freud's interpretative doctrines are examined and condemned one by one. A superficial view of the contents might lead to rejoicing in the hearts of the dyed-in-the-wool opponents of Freudian teachings, for the master, they might think, is here refuted from within the circle of his own disciples. This, however, would be very far from a true reading of this book, for Dr. Horney still adheres to the general principles of analysis, but differs from Freud in respect both of the true cause of the symptoms and of the therapeutic end in view. She thinks that the true bases of neurosis are the present trends of the patient's character, and it is this which requires analysis so as to redirect the will of the patient through an understanding of whither his present philosophy of life is leading him. For example, the positive and negative transferences, so obvious in analytical treatment, are not due to the revival of infantile attitudes of the patient towards his father, but to the actual feelings of an insecure person who at once welcomes the help of a sympathetic and understanding friend and at the same time resents the threat of a stranger to alter his own personality which he has taught himself to regard as perfect as a means of protecting himself against the very insecurity which underlies all his troubles.

With this sort of attitude many psychotherapists of the present day will find themselves in sympathy, for the doctrine of infantile sexuality as the explanation of all behaviour is wearing a little thin, and this book will prove stimulating to all those well versed in the subject. In the reviewer's opinion, however, it will be of less value to the neophyte, because the time is not yet ripe for the author's views to be formulated apart from an acquaintance with the fundamental principles of analytic doctrine and technique. The student's perfect textbook of psychotherapy still remains in the womb of time, and one would not like to say how long it will remain there.

ARTIFICIALLY INDUCED VARIATION

Erbschädigungen. By Drs. Gerhard Schubert and Artur Pickhan. Edited by W. F. Reinig. (Pp. 164; 12 figures.) Leipzig: Georg Thieme.

Most outsiders who attended the International Genetics Congress at Edinburgh last summer were probably surprised to learn that a complex new science had developed which dealt with the structure and properties of genes. One of the most interesting aspects of this new science was the production of mutations by artificial means—namely, by exposure of germ cells to chemicals, high temperatures, and short-wave radiations. An interesting account of this new aspect of heredity is given in the monograph entitled "Inherited Disease," which is one of a series that deals with the problems of theoretical and applied genetics.

Knowledge regarding the artificial production of mutations is based on experiments on the fruit fly *Drosophila*, but it is believed that the natural incidence of mutations is similar in all living forms—namely, two or three spontaneous mutations per 100 generations—and that any particular gene undergoes a mutation about once in every 100,000 to 1,000,000 generations. In the case of human material this conclusion is based largely on the study of haemophilia. The lethal effect of this mutation on males is so great that the condition would be weeded out by selection fairly rapidly if it were not being continuously reintroduced. The influence of the agents mentioned above on the spontaneous mutation rate can be measured quantitatively. It is now known, for example, that in *Drosophila* irradiation by 22 *r* of *x* rays increases the mutation rate by 1 per cent., and it is believed that there is a simple linear relation between the amount of irradiation and the increase in the incidence of mutations. The vast majority of mutations are of a pathological or semi-pathological nature, and hence the fact that it is relatively simple to increase the mutation rate cannot at present be usefully employed for accelerating selective breeding of mammals by increasing the incidence of variation. The general undesirable character of mutations makes it important, on the other hand, to know the likelihood of their being produced in human material by various agents.

The possible action of radiations on human germ cells is a problem of practical interest. Fortunately *x*-ray photography only involves a brief exposure of the ovaries to 1 to 2 *r*, and hence is unlikely to produce an effect, but roentgen therapy implies ovarian doses up to 200 *r*, and these are certain to affect the ova. The personnel in radiological departments are likely to receive effective doses in the course of a year. In 1937 it was calculated that a sister in a radium therapy institute received an exposure of about 240 *r* of gamma rays in the course of a year.

A problem of much greater general social importance is whether alcohol can cause an increased mutation rate. This problem has been studied by many authors. The offspring of alcoholics are usually inferior in quality; but since alcoholism is often a sign of a psychopathic condition and, furthermore, the environment of the children of alcoholics is likely to be highly unfavourable, it is very difficult to prove that any direct action of alcohol on the germ cells is transmitted to the offspring. The authors conclude that, in general, alcohol cannot be held responsible for the production of inherited derangements.

THE CARDIAC PATIENT

Heart Patients. Their Study and Care. By S. Calvin Smith, M.D., Sc.D. (Pp. 166. 10s.) London: Baillière, Tindall and Cox. 1939.

The title of this book aptly indicates the point of view both from which it has been written and from which it should be read. The art of managing the individual with cardiac or any other disease cannot be learned from textbooks, and this is far from being a textbook. In his preface the author implies that theoretical discussion will be avoided, but in the occasional lapse from this standard the matter is not very sound. This criticism also applies to many of the descriptions of symptoms and physical signs. For example, to state that "chest pain when of heart significance is nearly always precordial," and that angina pectoris is "agonizing," is to suggest

that few cases of these conditions will be correctly diagnosed. Again, while it is asserted that a good idea of the condition of the myocardium can be gained by paying attention to the intensity, quality, pitch, and duration of the heart sounds, one looks in vain for some mention of gallop rhythm, which really has some value as auscultatory evidence of myocardial failure. The book is written in flowery language, but behind this there is a lot of wisdom which should help others in the difficult art of dealing with heart patients.

Notes on Books

As has been said before in these columns, there should be a close time for small manuals of psychotherapy. Dr. NOEL HARRIS'S *Modern Psychotherapy* (John Bale, 7s. 6d.) is no better and no worse than many other such books, but there is nothing original in it and in many respects it is superficial and confused. Analytical methods are "covered" in a short chapter, and surely, if Jung's contribution is to be discussed in less than two pages, it would be better not to mention it at all. A chapter on occupational therapy is a welcome addition to such a manual, and the nature and applicability of various "crafts" are touched upon and there is also a brief discussion on child guidance with special reference to play-room work. The author regards this chiefly as a means of gaining contact with the child and wisely does not go into the vexed question of elaborate interpretation of children's play. It is a pity that in mentioning child guidance and stating in a short appendix at the end of the book that all information can be obtained from the Child Guidance Council he should give the address of that body as being in premises which it has never occupied. It does not appear that the author is greatly impressed with any method of treatment, and although he pays lip service to analysis he seems very doubtful of its real efficacy even in the psychoneuroses, and advises against it in the psychoses. He tends more to the Adolf Meyer plans of social rehabilitation by means of occupation in the latter conditions, though he does not do justice to the careful planning and wide scope of the methods of that school.

Vol. XVII, part 4, and Vol. XVIII, part 1, of *Tabulae Biologicae* illustrate the remarkable range of subjects in biological sciences upon which active work is proceeding. The subjects of these successive articles are colour changes in animals, root nodule bacteria, chromosome numbers in animals, the minor elements in agriculture, racial group differences in mentality, crystalline enzymes, and phytohormones. Another interesting feature of this chance sample of diverse scientific activity is that out of the seven articles six come from the United States and the remaining one from Holland. The article on crystalline enzymes by J. H. Northrop deserves special mention. It is only a few years since enzymes were considered to be wholly mysterious agents. Northrop shows seventeen photomicrographs of crystals of different enzymes or enzyme precursors, and describes the molecular weight of ten of these. Eight of these molecular weights lie between 18,000 and 42,000, which is the range found in the simplest proteins. This short article records in a few simple tables and illustrations a very remarkable advance in biochemistry, for which the author was largely responsible. *Tabulae Biologicae* are published at The Hague by Dr. W. Junk.

Memoirs of an Army Surgeon, by Colonel N. J. C. RUTHERFORD, D.S.O. (Stanley Paul and Co., 12s. 6d.), covers the Boer War, the war of 1914–18, and the following period. There is little arrangement, chronological or otherwise. Some of the stories of the war are interesting, some are amusing. Towards the end of the war Colonel Rutherford was in the Near East, and saw much of various headquarters—Salonika and Istanbul, which at the time were crowded with Russian refugees, a pathetic but difficult crowd. The most interesting part of the book is towards the end, where he describes the work of the garrison of the Tower.

Preparations and Appliances

MODIFIED DRILL GUIDE AND X-RAY GRID FOR PLACING A SMITH-PETERSEN NAIL

Professor E. W. HEY GROVES, F.R.C.S., writes:

In 1936 I described a drill guide to facilitate the placing of a Smith-Petersen nail into the fractured neck of the femur. The guide had two vertical prongs, which were thrust into the leg, one over the centre of the head of the femur and the other over a point where the axis of the shaft crossed the axis of the neck of the femur. These points were marked on the skin with the help of a notched angle guide placed over the parts before they were *x*-rayed.

I have since been able to improve both these appliances. In the first place I use a wire grid for the *x*-ray orientation. This wire grid is 4 inches by 3 inches, divided into quarter-inch squares by fine wire. It is laid over the thigh so that its long axis corresponds roughly with the line of the neck of the femur. Its shadow then appears in the *x*-ray picture, and it is easy to get the exact line of the neck of the bone by the

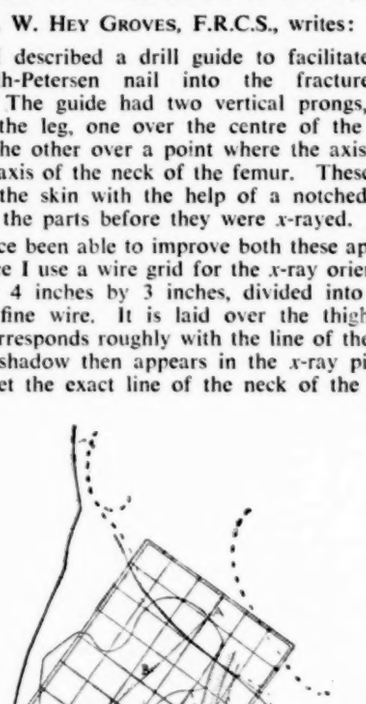


FIG. 1.

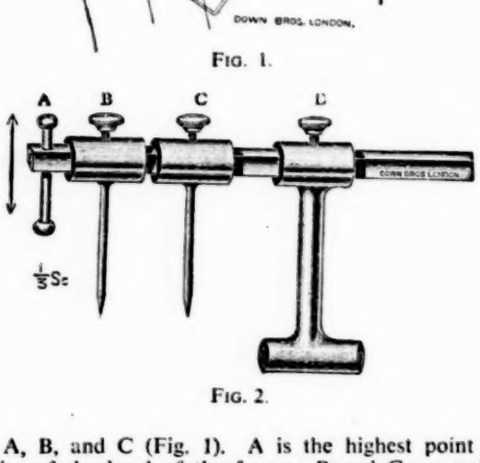


FIG. 2.

points A, B, and C (Fig. 1). A is the highest point of the convexity of the head of the femur; B and C are points on the axis of the neck; B is where the neck joins the head and C where the axis of the shaft and the neck intersect. The modified drill guide, as in the original pattern, has two sharp prongs, but these are of the same length and are intended to be thrust vertically into the leg at the points B and C. There is another rod at the end of the drill guide (A), but this has rounded ends and it moves up and down in the main shank of the drill guide. It is intended to mark the point A, the highest point of the convexity of the femoral head.

The three points A, B, and C having been marked on the patient's skin, the three rods A, B, and C on the drill guide are adjusted so as to occupy the same distances as the points A, B, and C on the skin. The instrument is then thrust into the

patient's thigh, the points of B and C being pushed through small holes of the skin made by a tenotome until they engage on the bony neck of the femur. The rod A, sliding as it does vertically, merely rests on the skin at the point A, and serves to make the laying of the drill guide over the axis of the neck more accurate. The drill carrier D is brought up against the patient's thigh, fixed in position, and will then serve to guide the drill in the axis of the neck of the femur.

When I first introduced the original pattern of the drill guide objections were made to it that the upper sharp vertical rod, which was intended to go into the bone over the middle of the femoral head, was in dangerous proximity to the femoral vessel. It seemed to me that this danger was exaggerated, because these vessels lie more than half an inch on the medial side of the centre of the neck of the femur. But I have been informed by a surgeon of great experience that he had actually perforated the femoral artery when using the guide. This has led to the present modification, in which the sharp pointers are only put into the leg over the neck of the femur and not over the head. This gives an ample margin of safety in case the femoral artery should be abnormal and tortuous.

THE KROMAYER LAMP MODEL V

A Kromayer lamp is essentially an apparatus for bringing ultra-violet light, and the rays from a narrow band in the infra-red region of the spectrum, to the site of application; so that the rays, when generated, pass through a minimal air space and, by means of quartz rods, can be focused with pressure on the part to be treated. An intensive mercury vapour arc, surrounded by a continuously circulating water jacket, provides not only ultra-violet light but also a wide range of heat or infra-red rays. The majority of these heat rays are, however, removed or absorbed by the water jacket; but a narrow band, in the region of 10,000 Angstrom units, passes through water, and it is from this band (which, compared with ultra-violet light, is deeply penetrating) that the majority of the clinical effects are obtained. These effects are also enhanced by the bleaching of the tissues when the quartz applicators are applied with pressure, as the capillary network of the skin, when filled with blood, tends to absorb a high proportion of the rays.

Treatment by the Kromayer lamp is deservedly becoming more and more popular, as it undoubtedly has a selective effect on lymphatic glands and tissues which ordinary ultra-violet light has not, as this is cooled by air and not by water and passes through an air gap to fall on tissues protected by their blood-filled capillary network. Therefore any improved model of this valuable form of apparatus is to be welcomed, particularly if it removes a number of the disadvantages of former models.

The new model will operate freely and with equal intensity in any position—horizontally, vertically, even upside down! These are genuine advantages and advances. The lamp, also, is lighter than former models and more convenient to hold. The applicators are better designed, though they still leave room for further improvement. The claim, however, of the manufacturers that "the total output from the new burner is four times as great as from any earlier Kromayer lamp" is not borne out by clinical tests. That the output is considerably greater is certain, and doses with this new model should be carefully graded until practical experience has been obtained. Twice to three times the output of the old Kromayer is probably a more correct estimate. Filters can be obtained as extras with the equipment, and a red one (not mentioned in the catalogue) appears to be particularly valuable in the treatment of swollen glands. The energy of the rays transmitted by these filters is necessarily diminished, but the increased power of the lamp leaves a better margin than with the older type of burner.

The makers (Hanovia Ltd., Slough, Bucks) recommend stepping up the voltage of the lamp after every fifty or a hundred hours' use, but they do not provide any meter connected with the arc to give the operator an accurate guide. This omission, even if it keeps the price down a few pounds, is unfortunate and should be remedied in future models. Moreover, it would provide an accurate gauge of the hours of total use and enable the manufacturers to make a fair allowance for a new burner that failed during its normal run through some internal defect. The new stand that goes with the lamp, though exceptionally neat in appearance, has a number of drawbacks that suggest that it was developed more in the workshop and drawing office than in conjunction with medical personnel familiar with older models. For instance, the adjustable arm has many drawbacks in actual practice, and appeared liable to fracture at one point during the test. An angle poise type of arm would be of real value in clinical use.

The alternative holder for the lamp in the panel scatters the rays of the lamp directly towards the eyes of anyone in the vicinity. Again, it would be a great advantage if the leads and water-jacket tubes and lamp could be housed in the sunk panel, and this should be provided with a door for protection from damage and dirt. Finally, there is no convenient drawer in the unit for holding the various appliances and filters. These points, which affect its practical daily value, should be remedied as soon as possible. They would make a considerable improvement in the utility of the whole unit.

The firm supplies a brochure with the lamp, called *Modern Therapy*, giving indications and technique for treatment. Though it is not possible to follow with approval all the clinical claims made for this apparatus in the book, still it has much of interest, particularly those sections on sinuses, wounds, ulcers, etc., which are specially apposite at the present time. There is no doubt that this new model is a genuine and definite advance on previous models and that the rays it emits are of therapeutic value in chronic lymphatic infections and indolent wounds. It should be given a full trial in the wards which receive the injured, whether their wounds occurred as the result of air, sea, or land offensives.

A report from the Ministry of Health on the clinical results of work carried out with this model would be of real value. From the relatively short clinical trial we have been able to have carried out we should expect, so favourable have been the results, to find this apparatus included in the schedule of equipment of every base hospital. If the Ministry of Health has already carried out such tests the sooner its report is available the better, as this country needs to employ every method of practical value that will curtail the period of disability after war injuries.

TILTING COUCH FOR X-RAY WORK

A tilting couch for *x*-ray work which embodies several special features has been constructed by Watson and Sons (Electro-Medical) Ltd. (Parker Street, Kingsway, W.C.2). The tilting is carried out easily by grasping a bar at the side of the couch, and this bar, when released, automatically secures the couch top at any of eleven positions between the horizontal and an angle of 45 degrees. The couch top, which is made of ray-transparent material highly resistant to abrasion, and supported on drawn steel channel members so as to obviate sag, is counterweighted at one end and furnished with roller-bearing pivots at about the centre of gravity when the patient is in position. The tube-carriage, under the couch, is also counterweighted, and the *x*-ray beam can cover the full working range of the couch top. There are other excellent features of the equipment, including a high-grade Potter-Bucky diaphragm arranged for electrical or manual release, conveniently placed tube diaphragm controls, the most recent type of fluorescent screen, a robust tube-stand which ensures freedom from vibration, and a spring counterpoise affording an ample range of vertical tube travel. The couch is thus available for screening and radiography in the horizontal, vertical, and several intermediate positions, movements of screen and tube being synchronized; also for teleradiography, over-couch radiography, and, with a special attachment, sectional radiography. Stretcher cases alongside the couch can be dealt with by swinging the tube column to the offside. For small or medium-sized hospitals where a single item of equipment is required for various kinds of examination this design, which is known as R.100, has obvious recommendations.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JANUARY 27 1940

OBSTETRIC SHOCK

Inquiry into the causes of death in childbirth discloses the unexpected and disturbing fact that in a considerable proportion of cases the fatality is attributable to shock. The Departmental Report of the Ministry of Health (1930) showed that 10.4 per cent. of the total maternal deaths in the series of cases investigated were due to shock; in the corresponding report of the Scottish Board of Health (1935) the proportion was 11 per cent. Total maternal mortality includes a substantial proportion of cases in which death occurred early or late in the puerperium. Deaths from shock, on the other hand, occur either before the birth process has been completed or soon afterwards. There can be little doubt that shock is a truly formidable element in what might be called the immediate mortality of childbirth, although an exact computation of its frequency and of the part it plays in association with other conditions—for example, haemorrhage—may be impracticable.

An important communication dealing with the causes of obstetric shock was published in the *British Medical Journal* of May 16, 1931 (p. 833), by Professor Miles Phillips. It was there pointed out that the causal conditions are not obscure nor do they present serious difficulties in management. Nevertheless it seems probable that no appreciable reduction in the number of deaths from this cause has occurred since attention was called to the subject in the official reports referred to above. Only cases in which shock terminated fatally are disclosed in these investigations, but it is fairly certain that in addition milder degrees of shock, from which recovery takes place, must often occur.

An examination of recent reports of our maternity hospitals shows that while in some there was happily no death attributable to shock uncomplicated by serious haemorrhage or serious injury, in others this was not the case. Death from uncomplicated shock may, it seems, occasionally occur in a "booked case" admitted to hospital promptly when labour started and presenting no obstetric complication. A common factor in such cases appears to be delay or actual difficulty in the delivery of the after-birth. A leading British obstetrician has expressed the view that an important cause of shock is to be found in "rough and unintelligent attempts to expel the placenta." Even if this view is justified by the author's personal experience of the practice of others it is permissible to believe that such ineptitude is rarely to be met with in either hospital or private practice. There can, however, be little doubt that the procedure known as "manual removal of the placenta" is attended not only by risks of infection but also by the risk of severe shock. It is possible that the latter risk has not received sufficient attention from either teachers or practitioners of midwifery. Retention of the placenta in the uterus is not an immediate source of danger except when attended by haemorrhage. It may be merely the result of a degree of fatigue of the uterine muscle, which may be expected to pass off as the patient recovers from the exhaustion that so often ensues when the second stage of labour is over. When a woman has been delivered by forceps under anaesthesia the desire to get it all over before she fully recovers consciousness is natural. Yet it should be recognized that in these circumstances forcible expression or manual removal of the placenta may be followed by the development of an alarming degree of shock. Voluntary expulsive efforts constitute a very important part of the normal process of delivery of the after-birth; in the unconscious patient voluntary efforts are in abeyance, and if the attendant tries to express the placenta he may not succeed without employing a considerable degree of force—enough in some instances to cause shock. When haemorrhage is going on the placenta is invariably partially detached: it can therefore be more easily expressed, and the desirability of terminating the third stage becomes the paramount consideration. Manipulations should, however, be carried out with gentleness and circumspection, for the combination of shock and haemorrhage presents a truly formidable complication.

Clinical experience suggests that the general condition of the patient has a bearing upon the incidence of obstetric shock. The woman who is underfed or anaemic does not stand the stresses of labour so well as one who is in good health; she is perhaps in particular liable to fall a victim to shock. These conditions, being amenable to simple treatment, deserve more attention from practitioners of midwifery than in many instances they receive, for one of the objectives of ante-natal care is to bring the patient to the ordeal of labour in the best possible condition. The debilitated woman is pre-eminently a case for inhalation analgesia during labour, for this will reduce both the exhaustion of the nervous system which results from pain and the risk of shock. Recognition of the condition of shock presents no difficulty and the general lines of management are not in dispute. There is a point, however, which still calls for emphasis—namely, that transport of a patient suffering from severe shock is likely to aggravate her condition and prejudice her chances of recovery. Removal to hospital should be delayed until the first simple restorative measures have been employed and have evoked a favourable response.

Cases are not infrequently recorded in maternity hospital reports in which the patient was admitted in so profound a condition of shock that death ensued before treatment could fairly be started. In districts where "emergency squads" have been organized such cases as these would have the best chance of recovery if treatment in the home were supervised by them and continued until removal to hospital could be safely undertaken.

It should be recognized that deaths from obstetric shock are in nearly all instances a reproach to the practice of midwifery. In the last ten years a notable reduction has been achieved in the toll taken by puerperal sepsis; unfortunately no appreciable reduction can be recorded in the deaths from the conditions classed by the Registrar-General as "accidents of pregnancy," to which group shock belongs. One of the urgent tasks still to be undertaken is the organization of measures designed to reduce the incidence of these "accidents" and to deal with them more effectively.

OBSERVATIONAL EPIDEMIOLOGY

Statistical epidemiology seems to the majority of simple-minded people a frigid pursuit. When handling the multitudinous cases in which he elects to be specially interested the statistical epidemiologist has perforce to make use of formulae, by the cold light of which he threads his mazes and finally, to image the whole, evolves an attack rate or a case mortality rate, to the general edification. Observational epidemiology, on the other hand, which keeps touch with the lives of men, is by contrast humanistic and should make a more direct appeal. Nevertheless, in comparison with statistical epidemiology we hear less of it, not so much because the fields to be observed are lacking as because observers possessing the gifts and inclination to utilize and record the opportunities offered are in the nature of things few and far between. Any rural area in England which has distinctive features and natural boundaries, being recessed but not too secluded and not too densely peopled, may offer an appropriate field for observational epidemiology, and the person designed by circumstance to play the part of observer is the doctor for the area, if over a period of years he can combine with his service as healer the sustained and discriminating study of the behaviour of local infections.

These expressions are prompted by the reading of a work recently published by Dr. W. N. Pickles[1] and dedicated to the people of Wensleydale, who figure largely in the story. He tells how, viewing the valley from its encircling hills, his gaze travelled from one of the early prisons of Scotland's injured Queen to village after village in which there was hardly a man, woman, or child whom he did not know by their Christian names. He felt that he himself, like every country doctor of long standing, occupied a strategic pinnacle for the investigation of infectious disease. The people being sparse in Wensleydale and the lines of communication few, his task as a tracker was simplified. Thus he knew how the influenza was brought in by a farmer who spent a night in Birmingham to bring back a new car, and how a boy from Manchester was the fount and origin of the measles which ultimately visited every village and hamlet.

Dr. Pickles has closely studied the incubation periods of the infectious diseases which came under his notice. He finds them to be remarkably constant, and expresses the view that the great variations which have been recorded are probably fallacious. He is definitely of opinion that the hospitalization of infectious cases in country districts is ill advised. His policy is to keep all at home. He presents an interesting study of the interrelations of chicken-pox and zoster, and deals also with Sonne dysentery. A lucid account is given of two outbreaks of epidemic catarrhal jaundice, the former of which had placed Wensleydale upon the epidemiological map. This disease, to his mind, is conveyed directly from person to person. He stresses epigastric pain as a very constant symptom. He found that the two epidemics tended to spare the large houses, which he attributes to the fact that the young people in them had acquired subclinical immunity at their boarding-schools or by visiting cities. His observations bring out that epidemic jaundice in Wensleydale had a long incubation period, ranging from a little under to a little over a month. The book is well produced and its three photographs of the district are pleasing. Its charts, which are cheerfully coloured, should enable the most indolent reader to grasp the sequence and relationship of the cases almost at a glance. A merited appreciation by Professor Major Greenwood forms a fitting preface to a work which will occupy a niche of its own in the archives of epidemiology.

[1] *Epidemiology in Country Practice*. By William Norman Pickles, M.D. John Wright and Sons. (7s. 6d.)

MEDICAL LIBRARY FOR THE B.E.F.

The Army Blood Transfusion and Surgical Research Service was initiated by the Royal College of Surgeons of England through the Conservator, Colonel John Beattie, and is under his direction; the unit in France with its research laboratory is under immediate command of the Pathological Curator, Lieutenant-Colonel L. W. Proger, and twelve of the College staff are engaged in that laboratory or stationed within reasonable distance. The College, therefore, is intimately connected with the Service, and the part it has played in its formation and development is widely recognized. Colonel Beattie has reported that the unit in France is severely handicapped by the lack of current medical and scientific periodicals, and that it

is difficult or impossible for the staff to keep in touch with scientific progress and recent developments. It is not necessary to emphasize how important it is for the profession in general that they should have easy access to the literature; in the case of those engaged upon research it is vital. In view, therefore, of the relations of the College to the Army Blood Transfusion Service it has been suggested that perhaps the Council would consider the possibility of establishing a library of current scientific periodicals for the benefit of the staff of the unit in France. The building of the Buckston Browne Farm and the Bernhard Baron Laboratories and the valuable work that has been done in them have enhanced the reputation of the College and made it an outstanding centre of experimental research; but, while admitting the great importance of this, it must be remembered that research is only one of the activities of the College, and that the College is concerned not only with research but with all that touches the interests of the art and science of surgery. The suggestion that a library should be founded for research workers seems therefore to lead directly to a wider possibility—the creation of a reference library which would be available to all officers in the medical services in France. It is certain that if the College were to found such a library it would be doing a great service to surgeons, research workers, and other medical officers with the B.E.F.; it is much needed and would be greatly appreciated. It would be a practical demonstration of the interest of the College and its desire to facilitate the work of the officers in the medical service.

ANTIVIVISECTIONISM IN SWITZERLAND

A leading article in the *British Medical Journal* for December 2, 1939, dealt with the threat to medical research in Switzerland created by the activities of an antivivisectionist society in Basle. This society had presented to the Grand Council of the Canton a petition demanding legislation in terms which would have placed disastrous restrictions on experiments made on animals for the purpose of advancing knowledge, while exempting from control all operations performed on animals for the profit or convenience of their owners. Sir Leonard Rogers, the honorary treasurer of the Research Defence Society, has been good enough to transmit to us the information which he has received from a Swiss correspondent as to the further progress and final defeat of this deplorable agitation. The Grand Council of the Basle-City Canton appointed a Government Committee to advise them concerning the petition, and, having considered this committee's report, rejected the petition by a majority of 97 votes to 1. In democratic Switzerland, however, it appears that the petitioners were able to demand the submission of their proposal to a popular vote, even after such a crushing official rebuff. There followed, accordingly, propaganda of a kind with which we are familiar in this country, in newspapers and on public hoardings, and the academic and scientific interests which were threatened found themselves obliged to organize an educative campaign in opposition. When the question was put to the public vote only 7,415 votes were recorded in favour of the petition, though nearly 12,000 had earlier signed it, while 23,623 votes were cast for its rejection. It may be hoped that such a result indicates a measure of success in enlightening even some of those whom misrepresentation had earlier misled into giving their signatures too readily. For the time being the attack has, in any case, been routed and the threat to research averted. It is only sad to think that our Swiss colleagues have had to divert so much of their time and energy from their proper and important activities. In this country also, as Sir Leonard Rogers has often pointed out, such a waste of time which can ill be spared from the humane duties of research has been the only achievement of the antivivisectionists, for which, over a relatively short period, they have expended money that in the aggregate would amount to a very large fortune.

NOMENCLATURE OF BLOOD GROUPS

The use of different terminologies for the blood groups and the sera which contain the antibodies needed for their diagnosis, leads to much confusion and uncertainty, and occasionally to a specimen of blood or of serum being mistaken for one of another group: we need hardly underline the danger of such a mistake in cases of blood transfusion. The existence of the four blood groups, the discovery of which we owe to Landsteiner, depends on the presence or absence of two antigens—A and B—in the red blood cells, and two antibodies—anti-A (or α) and anti-B (or β)—in the serum; anti-A is specific for A and anti-B specific for B. According to whether a person's red cells contain one, the other, both, or neither of the antigens, he belongs to group A, B, AB, or O. The groups were numbered first by Jansky[1] in 1907 and later, and quite independently, by Moss[2] in 1910. In these two classifications the numberings of the groups I and IV are reversed; groups II and III being the same in both. Jansky's paper appeared in an obscure journal in the Czech language, and, so far as is known, can only be consulted in one library in this country and in two in the U.S.A.; it was the subject of an article by Kennedy[3] in 1931. The paper by Moss was published in the *Bulletin of the Johns Hopkins Hospital* and had a wide circulation; until quite recently the Moss classification was, with few exceptions, the one used by everybody in this country, but in much of the earlier American work Jansky's was given precedence. For the sake of uniformity and the avoidance of misunderstanding we strongly urge the exclusive use of the alphabetical nomenclature, first suggested by von Dungern and Hirschfeld, and letters designating the antigens in the red cells and the antibodies in the serum have the further advantage of giving much information about the groups. As, with extremely rare exceptions, the antibodies anti-A and anti-B are always present in a person's serum unless his red cells contain the corresponding antigens A or B, it is easy for a worker, without consulting note or table, to write down the first two lines of the following schema, in which the numerical classifications are included for comparison. Remembering that a donor's red cells should not contain an antigen for which the recipient's serum has the antibody, it can be seen at once whether a particular combination is compatible or not.

Antigens in red cells	O	A	B	AB
Antibodies in serum	Anti-A + Anti-B ($\alpha + \beta$)	Anti-B (β)	Anti-A (α)	None
Jansky	I	II	III	IV
Moss	IV	II	III	I

As was pointed out by Dr. Neville Goodman in a letter to the *Journal* of January 13 (p. 73), the alphabetical has been recommended as the international nomenclature by the Health Committee of the League of Nations, and

[1] *Sborn. klin. v. Praze*, 1907, **8**, 85. [*Sbornik Klinicky (Archives Bohèmes de Médecine Clinique)*, Prague, 1907, **8**, 85.]
[2] *Johns Hopk. Hosp. Bull.*, 1910, **21**, 63.
[3] *J. Immunol.*, 1931, **20**, 117.

since January 1, 1939, has replaced that of Moss as the official notation of the British Red Cross Society's Blood Transfusion Service. The alternatives α and β for anti-A and anti-B are not included in the recommendation, but they are much used by some workers with great experience of the subject and cannot give rise to any difficulties. The lower-case "a" and "b" for the antibodies, seen occasionally, may give trouble and should not be employed. To unlearn an old and to adopt a new notation requires a determined effort, and recent correspondence with workers in most parts of the United Kingdom has disclosed that, whereas many have changed over to the alphabetical, most are still using the Moss classification. At present uncertainty seems to occur most often in regard to the antibodies, and whereas "Group II serum" or "Group A serum" nearly always means anti-B (or β), these designations are sometimes used for anti-A (or α). There can be no doubt that until the alphabetical is generally employed the Moss classification should be included in the labelling of any specimen of blood or serum. It may be expected that the use of numbers will be gradually given up; the vast number of blood-group tests now being made should hasten the change.

ELECTRIC CONVULSION THERAPY

The traditional treatment of mental illness was punishment, if not of the patient at least of the demons thought to possess his body, and the latest addition to the armoury of the psychiatrist might seem to some to be in line with tradition. Electricity is fast becoming an essential of the modern environment, and it is natural that we should now call down the lightning to exorcise the evil spirits which in the past have held out so stoutly against flogging, ducking, insulin, and cardiazol. In the past few weeks there have been four communications in this country on the subject of convulsions induced by electric currents in the treatment of schizophrenia and allied conditions. Kalinowski[1] presented an account of the pioneer work of Cerletti and Bini in Rome; Fleming, Golla, and Walter[2] published an adaptation of the Italian technique to present-day English conditions, together with a report on the electro-encephalographic changes following the treatment; and on the same date Shepley and MacGregor[3] contributed to this *Journal* an account of their experiences with apparatus based on the Italian design. Then, as reported in our issue of last week, the two latter teams pooled their experiences at a meeting of the Psychiatric Section of the Royal Society of Medicine. Details of the method and some idea of the results to be obtained with it are now readily available from these several sources. It is satisfactory to note that the two English groups report no important variations in their technical or clinical findings, although there are certain differences in the design of their apparatus. As Walter pointed out at the Royal Society of Medicine, many interesting points are raised by the new method—the exact nature of the electrical stimulus and its relation to the electrophysiology of the cortex, the character of the convulsion induced, and its relation to the cardiazol fit and the spontaneous seizure. Such problems as these will keep many workers busy for years to come, with great ultimate profit to science and to medicine, but the immediate questions which occur to the practical psychiatrist can already be answered with some confidence. The first question is likely to be, "Does it work?" The answer is that a severe prolonged general convulsion can be quickly and regularly induced by electrical means. The therapeutic effect of the treatment seems to be precisely the same as that of other convulsion therapies. There are some who mutter, "It may be modern but it is not good," but a free vote of all psychiatrists with experience of it would certainly give the verdict that convulsion treatment really increases the number of remissions in schizophrenia and greatly accelerates recovery from depressed states. A reply to the next question, "Is it safe?" is not so easy. There have been many recent reports of accidents occurring during cardiazol treatment. Dislocations of various joints, fractured femurs, compression fractures of the vertebrae, are the commonest troubles. From the Italian accounts it seemed that such mishaps could be entirely avoided by replacing cardiazol by electricity, but this confidence may be premature. Fleming, Golla, and Walter reported two cases in which pain in the back after an induced convulsion was traced by *x* rays to fractured vertebrae, and it is clear that this is a risk which must be faced, although it cannot be regarded as a serious deterrent. Set against the feeble chances of recovery from what has been justly described as a malignant disease of the mind, a chance of perhaps one in twenty of having a fracture which causes temporary inconvenience may be classed as a risk well worth running for the patient and the relatives. Moreover, there is a distinct possibility that the conditions which favour such mishaps may be eliminated by judicious modification of technique. A ballot of all psychotic patients with experience of shock from cardiazol and electricity would certainly be unanimous in favour of the latter, if indeed the remarkable amnesia for the treatment permitted the voters to recall its existence. Then there is the important question of cost. The apparatus is neither elaborate nor delicate, nor does it require a trained operator. Consumption and maintenance charges are negligible. The only criticism which can possibly be made of the method is that it is new, but it has been used by the Italians for two years and is now accepted all over Italy as the standard method of convulsion therapy. Assessment of the long-term results of such treatment must await the passage of time; there is always a possibility that induced convulsions may lead to some mental deterioration in the patient which has not yet become noticeable; but if the final verdict is favourable there can be little doubt that the electrical method will be preferred to the injection of toxic drugs.

[1] *Lancet*, 1939, **2**, 1232.
[2] Ibid., 1939, **2**, 1353.
[3] *British Medical Journal*, 1939, **2**, 1269.

BOVINE INFECTION IN HUMAN TUBERCULOSIS

Knowledge of the part played by the bovine bacillus in tuberculosis in man is still scarce and may be misleading. This is because investigations in this connexion are laborious and have therefore been carried out in few countries, and because results are not applicable even to all districts of the same country. Recent research, particularly in Great Britain and Denmark, is increasing our knowledge and has helped in demonstrating the factors that may account for the differences noted by different workers, in different districts, in different forms of tuberculosis, and at various ages. At a meeting of the Swiss Association against Tuberculosis Dr. T. Baumann[1] presented a detailed and very useful review of the subject. The incidence of the bovine bacillus is not only greater in the tuberculosis of childhood than in that of adult life, but is greater the younger the age group. The mode of infection in children is mostly through the digestive tract

[1] *Schweiz. med. Wschr.*, 1939, **69**, 233.

as the result of drinking unboiled infected milk ; but some are undoubtedly infected through the air passages by adults suffering from pulmonary tuberculosis caused by the bovine bacillus or by infected cattle. Two things are clear: the bovine bacillus is as pathogenic to man as is the human bacillus, but the different effects caused by the two types of tubercle bacillus are due to different mode of infection and not to altered virulence or a changed response by the body. In a recent paper[2] Dr. W. T. Munro, discussing the epidemiological aspects of pulmonary tuberculosis due to the bovine bacillus, bases himself on the 1,061 cases examined at the Glenlomond Sanatorium, where fifty patients were found to be infected with the bovine type, and on figures from other sources. He concludes that there appears to be no real increase in the incidence of the bovine type ; that most of the cases arise from infected milk, there being a slightly higher incidence of the disease among those employed on farms than among the average rural population ; that there is evidence of spread of the bovine type by human agency ; and that the possibility of infection of tubercle-free herds by a person coughing up bovine tubercle bacilli cannot be excluded. Munro believes that mutation of bacilli can occur, but that it will not take place in the lifetime of any one observer.

FURTHER WORK ON EXPERIMENTAL HYPERTENSION

Reference has been previously made in these columns to work suggesting that most forms of persistent hypertension in man and the experimental hypertension produced by constriction of the renal artery are alike of chemical and not of nervous origin. During the last few years attention has been increasingly directed to the experimental form, which lends itself to more precise investigation. The development of raised arterial pressure as a result of constriction of the renal artery was first described by Goldblatt and his colleagues in 1934,[3] and subsequent work has demonstrated that hypertension follows renal ischaemia in the completely sympathectomized animal and when the kidney has been severed of all nervous connexions by transplanting it to the neck. In experimental hypertension the only tenable hypothesis thus seems to be that raised arterial pressure is due to the release of a pressor substance from the ischaemic kidney. One curious phenomenon fully established by Goldblatt and other workers is that the degree of hypertension after renal ischaemia is less when the animal possesses one normal kidney. This is most strikingly shown by the rise in arterial pressure which occurs when the normal kidney is removed from an animal with one renal artery constricted. Katz, Friedman, Rodbard, and Weinstein[4] interpret this as indicating that the normal kidney excretes or inactivates the pressor agent responsible for hypertension. An alternative explanation was offered by Pickering and Prinzmetal,[5] who noticed that in the rabbit constriction of one renal artery was followed by transient mild hypertension and by atrophy of the ischaemic kidney and hypertrophy of its intact fellow. Evidently the normal kidney had taken over much of the work originally shared, and they suggested, therefore, that the renal disturbance giving rise to hypertension was a relative ischaemia—that is, a disturbance in the normal relation between renal blood flow and the work of the kidneys. Verney and Vogt[6] have shown that in the dog hypertension depends on renal load as well as on renal ischaemia. They found that when both renal arteries are constricted removal of one kidney increases the hypertension ; in the presence of ischaemia, therefore, the hypertension is greater the less the amount of functional renal tissue, whether this has or has not its normal arterial supply. They further demonstrated that in such animals the change from a diet of bread and milk to one of meat, or the addition to the diet of 10 grammes of sodium chloride a day, was followed by an increase in the degree of hypertension, which subsided to its original level when the dietary protein or salt was reduced. They found potassium acetate ineffective. In the absence of ischaemia, however, hypertension could not be produced by increasing the strain on the effective renal tissue by dietary measures or by reduction of renal tissue, or by both. Verney and Vogt point out that this ability to raise the arterial pressure in the event of dietary overload, and thus to facilitate the renal work, gives ischaemic kidneys a curious advantage over kidneys defective by reason of simple reduction in mass. Houssay and his colleagues[7] have shown that a chloralosed nephrectomized dog reacts by a rise of pressure to the grafting into its neck of an ischaemic but not of a normal kidney. These authors have further demonstrated by test on the vessels of the frog that in the dog the plasma from the renal vein of an ischaemic kidney contains a non-ultrafilterable pressor substance, whereas the venous plasma from a normal kidney does not. This work suggests that a pressor substance is released into the circulation by the kidney under the stimulus of ischaemia but not under normal conditions. On the other hand, Verney and Vogt have discovered, by a double heart–lung perfusion method, that the isolated dog's kidney, not previously rendered ischaemic, releases into the circulation a substance constricting the vessels of the gut. The relation of the substance or substances released by the kidney to renin, the pressor substance which can be extracted from normal renal cortex, has not yet been investigated. The work is very much in its infancy, but it promises to open a new chapter in the physiology and pathology of the kidney.

[2] *Edinb. med. J.*, 1939, **45**, 165.
[3] *J. exp. Med.*, 1934, **59**, 347.
[4] *Amer. Heart J.*, 1939, **17**, 334.
[5] *Clin. Sci.*, 1937-8, **3**, 357.
[6] *Quart. J. exp. Physiol.*, 1938, **28**, 253.
[7] *Presse méd.*, 1939, **47**, 810.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* are now ready. They will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or both of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Accountant, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

The Mitchell Lecture (postponed from 1939) will be delivered before the Royal College of Physicians of London by Dr. F. G. Chandler on Wednesday, February 7, at 2.30 p.m. His subject is "Some Observations on the Diagnosis and Treatment of Pulmonary Tuberculosis." Dr. R. E. Smith's Milroy Lectures, on February 13 and 15, will be on "Acute Infectious Diseases at School"; and Dr. W. D. W. Brooks's Goulstonian Lectures on February 22, 27, and 29, on the "Pathology and Treatment of Pulmonary Tuberculosis."

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

TREATMENT OF IRRECOVERABLE PARALYSIS AFTER POLIOMYELITIS—I

BY

H. J. SEDDON, F.R.C.S.

The treatment of poliomyelitis during the stage of recovery, although technically difficult, is easy to understand. But the treatment of permanent paralysis does not at first sight appear to be governed by any clearly defined principles. There is, indeed, a certain air of mystery about it which orthopaedic surgeons have made little attempt to dispel. As one of them said in a recently published textbook, "No definite rules as to the procedure can be given, and each case must be dealt with according to the condition found." The second part of this statement is, one would hope, a general principle in therapeutics; and as to the first, I hope to show that certain definite rules can in fact be given. Few people would disallow that the treatment of residual paralysis is the province of the orthopaedic surgeon, but an understanding of the underlying principles is of some importance in general practice.

When is Paralysis Permanent?

This question was answered very clearly by Norman Harry (1938) in a paper based on a study of cases treated at the Country Branch of the Royal National Orthopaedic Hospital.

1. Provided that the patient is under proper treatment from the start the greater part of recovery takes place before the close of the first year (Fig. 1). Rest in bed, with such splinting

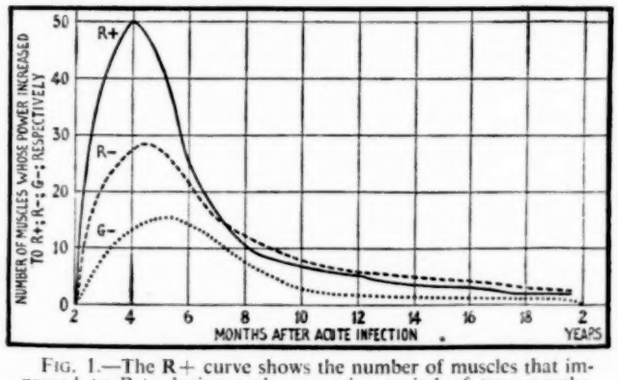


FIG. 1.—The R+ curve shows the number of muscles that improved to R+ during each successive period of two months. The curves R− and G− show the number of muscles increasing in power to R− and G− respectively. It will be seen that a maximal number of muscles increase to R+ at the four-months period, that at six months only half the number did so, while after a year very few increased to R+.

as may be necessary, is most desirable throughout the period of recovery unless the paralysis is confined to the upper limbs or to muscle groups below the knee. If treatment has been inadequate, then it is best to deal with the case as if it were a recent one, giving the patient the benefit of a full course of treatment.

2. If a limb remains completely paralysed for four months the paralysis is permanent and further treatment is a waste of time.

3. If no muscles are found to be completely paralysed immediately after the acute phase the prognosis is excellent, and something approaching complete recovery may be expected.

4. Involvement of the spinal and abdominal muscles often calls for more than the six to twelve months in bed required for lower-limb paralyses. Recovery continues sometimes for eighteen to twenty-four months, and any effort is worth while if a paralytic scoliosis can be avoided.

5. The only certain method of following the progress of recovery is by keeping complete muscle charts—as described in Harry's paper (Fig. 2).

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL

Name..... Number..... Trunk and.....lower extremity

Date						
*Type of Contraction						
Erector Spinae						
Abdominals						
Gluteus Maximus						
Abductors of Hip						
Tensor Fasciae Latae						
Adductors of Hip						
Quadriceps						
Sartorius						
Psoas						
Inner Hamstrings						
Outer Hamstrings						
Calf Muscle						
Tibialis Posterior						
Tibialis Anterior						
Peronei						
Extensor Longus Hallucis						
Extensor Longus Digitorum						
Flexor Longus Hallucis						
Flexor Longus Digitorum						
Small Muscles of Foot						

Gait Trendelenburg

Contractures, Deformities, Measurements.....

Operations.....

*V—Voluntary F—Faradic G—Galvanic

Strength of Contraction
N Normal contraction
R+ Contraction against gravity and resistance
R− Contraction against gravity only
G− Contraction but not against gravity
F Flicker
O No contraction

FIG. 2.—Muscle chart of the lower extremity for recording progress of cases under treatment.

When recovery is maximal treatment by appliances or operation has to be considered.

Appliances: Three Questions

At this stage three questions must be answered. First, does the patient require an appliance to protect muscles that are recovering but still weak—for example, a belt for weakness of the abdominal muscles or double steels to protect a useful but weak quadriceps? Secondly, does he require an appliance to compensate for a disabling paralysis too extensive to be amenable to operative treatment—for example, complete paralysis of both lower

limbs? Lastly, if the patient is young and has permanent paralysis that could be helped by operation, is it advisable to supply an appliance until the child is old enough for operation? Arthrodesis of the foot, for instance, is a most valuable stabilizing operation, but it is best postponed until the age of 12 or later, as, notwithstanding the confidence of surgeons who perform the operation early, it cannot fail to arrest bone growth at the surfaces that have been resected.

Indications for Operative Treatment

There are three indications for operation. (*a*) To improve function. (*b*) To render an appliance unnecessary. This is another way to improve function; for although a patient with foot-drop, for example, may get about very well with an appliance carrying a toe-raising spring, he becomes more independent if the foot-drop is controlled by arthrodesis, since he can then do as much without an appliance as formerly he could with one.

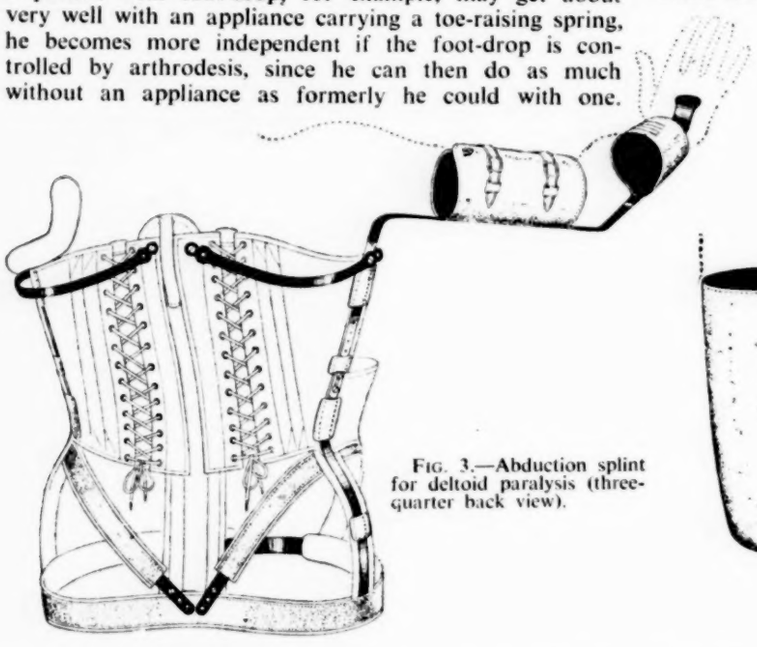


FIG. 3.—Abduction splint for deltoid paralysis (three-quarter back view).

(*c*) To correct deformity. Given proper supervision during the stage of recovery deformities rarely arise, and we are not concerned here with the distortions that are sometimes seen in neglected cases.

Two types of operation—arthrodesis and tendon transplantation—are commonly used to improve function. The aim of the first is to immobilize a joint rendered unstable by paralysis of one or other of the muscle groups controlling it. Such an operation often renders the action of surviving muscles more effective, and may release certain of them for transplantation to insertions where their power may be usefully employed. In paralytic pes equino-valgus (calf muscles and peronei working) arthrodesis of the tarsal joints abolishes eversion and inversion, and permits transplantation of the peronei to the dorsum of the foot, where they can be trained to replace the paralysed dorsiflexors. It is chiefly in this combined type of operation that tendon transplantation finds its best application. As a general method of treatment it fell into disrepute because its early advocates often expected transplanted survivors to undertake tasks far beyond their capacity. But when the limitations of tendon transplantation are appreciated its value as a supplementary operation is far from negligible.

Upper Limb

Shoulder.—As soon as it becomes apparent that the shoulder muscles (trapezius, deltoid, spinati, pectoralis major—but particularly the deltoid) are permanently paralysed the abduction splint (Fig. 3) should be discarded. The muscles named generally recover rapidly or not at all, and it is crippling the child unnecessarily to splint the limb when there is little further hope of recovery. Let him use his hand and elbow, which are much more important than the shoulder muscles. There is no splint of any value for permanent shoulder paralysis, and the only useful measure is operation. The most reliable operation for deltoid paralysis is arthrodesis of the shoulder. Provided that there is satisfactory control of the scapula and of the limb distal to the shoulder, stability combined with a useful range of movement (entirely scapulo-thoracic) may be obtained by this operation. There are some who consider arthrodesis of the shoulder the routine operation for deltoid paralysis, but this is a mistaken attitude. Patients with deltoid paralysis often develop the most ingenious trick movements, and in this may minimize their disability to a surprising degree. Before advising this operation it is necessary to ascertain exactly what the patient is able to do, and then ask him what other movements he would find useful. Only if arthrodesis will enable him to carry out one or more of these movements or give him increased stability without abolishing useful tricks already acquired is it justifiable to advise it. Less than one-quarter of my own cases of deltoid paralysis have been dealt with by arthrodesis. Satisfactory fusion is not likely to be obtained before the age of 10 years.

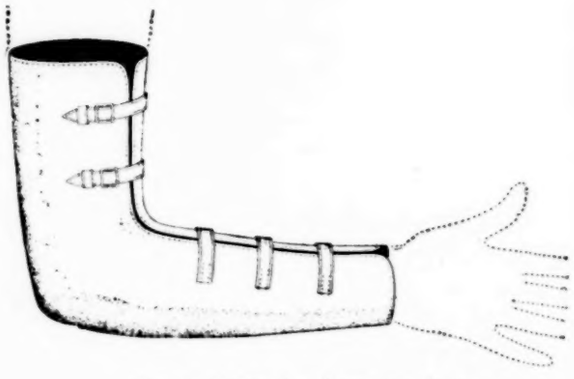


FIG. 4.—Splint for biceps paralysis.

Elbow.—There is no great urgency about discarding a splint if the biceps is involved, since an elbow splint does not preclude use of the hand. This valuable muscle may be given a prolonged chance of recovery by encasing the elbow at right angles in a celluloid splint (Fig. 4) with either straps or a zip fastener. This enables a patient to do school work or typing long before the biceps is strong enough to support the forearm unassisted for more than a short time without fatigue. If the flexors of the elbow are completely paralysed only one operation offers any hope of relief, and unfortunately the conditions essential to success are not often present. If there are a useful hand and a strong common flexor group arising from the medial epicondyle of the humerus a most valuable range of active flexion at the elbow may be obtained by moving the origin of these muscles to a higher position on the medial supracondylar ridge (Steindler). But I have found only five suitable cases during the last eight years.

Wrist.—The most useful position of the wrist is 35 degrees of dorsiflexion, and a moulded leather splint to maintain this position compensates well for loss of control due to paralysis. After the age of 14 still better function may be obtained by arthrodesis of the wrist—an operation in which a graft extending from the radius into the carpus is essential. Minor paralyses may sometimes be balanced by judicious tendon transplantation.

Thumb.—Paralysis of the intrinsic muscles of the thumb seriously impairs the usefulness of the hand; it is the most disastrous single paralysis in the upper limb. Fortunately the flexor longus pollicis usually escapes, and there are now reliable methods of compensating in some measure for the loss of opposition. A simple leather splint (Fig. 5) is most valuable, but there should be no hesitation

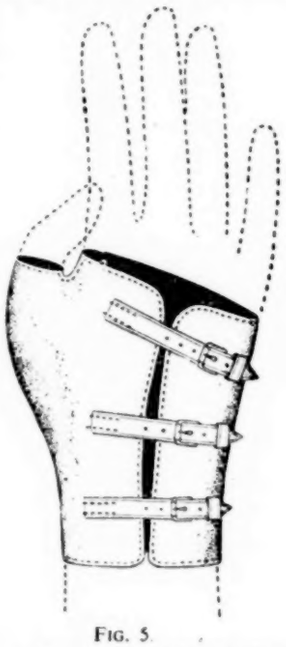


FIG. 5.

FIG. 6.

FIG. 5.—Splint for paralysis of intrinsic muscles of thumb.

FIG. 6.—Gratt between first and second metacarpals to maintain the thumb in a position of opposition.

in resorting to operative measures as soon as it becomes clear that paralysis of the intrinsic muscles is permanent. Various tendon transplantations are available, the choice of the particular method depending on which muscles can be spared. Fixation of the first metacarpal in the opposed position gives a useful and stable thumb and is applicable in every case where the flexor longus pollicis is active; it is the most reliable method of all, and may be performed any time after the fifth year of life (Fig. 6).

(Figs. 1 and 2 are reproduced from the article by Mr. N. M. Harry in the *British Medical Journal*, 1938, **1**, 164.)

REFERENCE

Harry, N. M. (1938). *British Medical Journal*, **1**, 164.

Thyroid Hyperactivity.—Ernst describes a course of medical treatment for cases of thyroid hyperactivity which he claims gives good results. The course lasts four to six weeks. Patients are encouraged to drink waters containing calcium, iron, magnesium, sodium, and arsenic, and to have carbon dioxide baths. They are given a bland diet and a strict daily time-table of rest and exercise. Mild sedatives also are usually required. Hydrotherapy and physiotherapy are given in selected cases.—Medical Treatment of Thyroid Hyperactivity. W. Ernst.—*Wien. klin. Wschr.*, June 30, 1939, **52**, 626.

NOTES ON THE ARMY MEDICAL SERVICES

BY

Colonel E. M. COWELL, C.B.E., D.S.O., M.D., F.R.C.S.

The aim of this article is to give a picture of the medical services of the Army that may help the senior student and newly qualified man in their choice of service in this time of national crisis. O.T.C. experience is of great value to the individual both as an applicant for a commission and when working in the unit of the Army to which he is posted. Those students who have not hitherto served in the medical O.T.C. are strongly urged to join forthwith: the R.A.M.C. wants them, and the country needs them as soon as they qualify. I was one of the first to join a medical section of the University of London O.T.C. when it was formed in 1909. Early experiences as private and sergeant have been found invaluable.

Medical Units of the R.A.M.C.

The newly commissioned officer in the R.A.M.C. may find himself posted to one of many units, either at home or over-seas in almost any part of the world. In this country the troops undergoing training need the services of doctors, and large numbers of medical officers are still required. The work is mainly regimental, including sanitation and lecturing to medical personnel.

Base Hospitals.—Large hospitals are organized at the base, either at home or over-seas. Facilities exist for medicine and surgery, as well as for work in all the special departments. Orthopaedic and plastic centres afford immense scope for surgeons who are interested in these subjects.

On the Lines of Communication.—Wounded and sick troops need medical attention while being evacuated. Medical officers are required for duty on hospital ships, trains, barges, motor ambulance convoys, and possibly even in air ambulances. Casualty clearing stations are highly organized surgical centres where the first surgical operations are performed. Six to eight teams, each with a surgeon, will be employed continuously in times of battle, and large numbers of major operations will be performed each day. Mobile *x*-ray units, pathological laboratories, etc., are also to be found, as well as fever hospitals, centres for nervous cases, and so on.

In the Field.—Many doctors are required in each division. The A.D.M.S. (Assistant Director of Medical Services) is in command of the R.A.M.C. personnel, and acts as medical adviser to the General Officer in Command (G.O.C.). Regimental medical officers are posted to the various infantry battalions, to the field regiments, and so on. The work is interesting and valuable. Very much depends on the medical officer, and a good M.O. is worth many rifles. There are ten officers in each field ambulance. These units are mobile, being now mechanized, and function as field hospitals, rest stations, dressing stations, and so on. They are provided with wonderful equipment of the most modern type, all carefully selected, so that the sick or wounded soldier in the field can receive the best professional attention.

Subjects Medical Officers should be Acquainted with in the Field

(A) PROFESSIONAL:

1. *Medical.*—Rapid clinical diagnosis, with materials at hand. Swift decision as to disposal. On sick parade sympathy but firmness. Familiarity with war diseases—trench fever, etc.
2. *Surgical.*—Rapid diagnosis; "triage," or sorting and grading large numbers of casualties according to severity of wounds. Technique of operating for open pneumo-

thorax, major haemorrhage, and emergency amputations in forward areas. (Major surgery is carried out further back at the casualty clearing station.)

3. *Psychological.*—Study of emotional types and knowledge of men. Psychasthenia and neurasthenia.
4. *Physiological.*—The effects of fatigue, anhydraemia, fear and excitement, etc.
5. *Specialist Subjects.*—Scope exists at base hospitals for all the specialists.

(B) MILITARY:

1. Composition and establishments of Army units (army, corps, division, brigade, battalion, company, etc.). Knowledge of enemy formations.
2. Staff organization; administration methods.
3. Tactical dispositions.
4. Communications.
5. Types of weapon, ranges, effects.
6. The work of the R.E., R.A.S.C., R.A.O.C.
7. Passive air defence, including fire fighting and defence against chemical warfare.

(C) AIR:

Air co-operation, protection against attack, recognition of aircraft, camouflage.

(D) HYGIENE AND SANITATION:

Purity of water. Cookhouse and cooking. Latrines and disposal of excreta. Incinerators. Disinfestation and laundries. Clothing, bedding, billets, ventilation. Prevention of disease. Chiropody. Baths.

(E) R.A.M.C. WORK:

1. *Organization* of the medical services. Staff work.
2. *Establishments* of medical units from forward areas to base.
3. *Internal Economy of Units.*—Pay; messing, food, and diets; quarters and billets; recreation; military law; orders; office work; records and reports; clothing; laundry; baths; mess etiquette.
4. *The Geneva Convention.*
5. *Individual Training.*—(1) Conduct on parade; squad and company drill; word of command. (2) Stretcher drill and carrying wounded. (3) Route marching. (4) Cross-country work by night and day. (5) Map-reading and compass work. (6) Physical training. (7) First aid. (8) Quartermaster duties; prices of commodities. (9) Lecturing, teaching, and demonstrating. (10) Control and care of men: "man-mastership." (11) Discipline. (12) Possibly horsemanship.
6. *Collective Training.*—(1) Siting and disposition of medical establishment in the field. (2) Lorries and lorry loads. (3) Medical equipment, supplies, and stores. (4) Medical reconnaissance, billeting, etc. (5) Tactics and movements; times, distances, and performances. (6) Transport and evacuation of casualties, by land, water, or air.

(F) PERSONAL ATTAINMENTS:

Languages (French and German). Sketching; drawing plans. Naked-eye astronomy. Tact and diplomacy. Initiative, fearlessness, and determination. Car driving; motor cycle and bicycle riding. Physical fitness. A young officer should be in such training that he can run five miles twice a week, or march twenty miles and then carry on with duties for five or six hours or more without rest and with the minimum of food.

The subjects given in this list should be diligently studied by all young officers. Having qualified and learned the elements of professional work, the newly joined officer is in the position of a boy passed through school and going up to the University. After thirty years of experience in the Army I find that there is always something fresh to learn.

Pay and Promotions, etc.—Information can always be obtained from the Head Office of the British Medical Association. In war time promotion may be rapid. The ten to twelve years' wait for a captain to become a major may be cut down to one to two years. In the last war several medical officers were commanding units before they were 30 years old.

Summary

The Army Medical Services offer great opportunities for professional work of high standard.

Regimental doctors are required, who should be trained to be efficient officers with a sound military knowledge.

Personal physical fitness, together with well-developed moral qualities of cheerfulness, fearlessness, discipline, and determination, is essential.

Begin training now, whether qualified or unqualified.

HEALTH OF THE SCHOOL CHILD

CHIEF MEDICAL OFFICER'S REPORT

Sir Arthur MacNalty's report for 1938 on the health of the school child was issued by the Board of Education at the end of last week.[1] War conditions have necessitated a general curtailment of the report, and the usual chapters on special subjects have been omitted.

For over thirty years the School Medical Service has been actively promoting the health and welfare of school children. To place the school child in a healthy environment, to build him up on sound lines, to protect him against disease, and to see that he is so adequately nourished that he can take full advantage of the education, both mental and physical, provided for him—these have been the aims of this progressive service, and "while we are yet far from perfection, school children of to-day in general health, in physique, and in stature are infinitely better than when the School Medical Service began its task."

The introduction considers the circumstances which made it necessary to evacuate school children from large urban centres of population in war time, and describes the far-reaching organization which this measure called for and its effect upon the School Medical Service. Much of this work was planned in the year under review, and at the same time the ordinary work of the service continued.

Nutrition

The general impression produced by the reports of school medical officers is cheering, though there are areas where no improvement can be reported. During the year 1,674,023 children were assessed at routine medical inspections in respect of their nutritive state; 14.5 per cent. were found to be excellent, 74.2 per cent. normal, 10.8 per cent. slightly subnormal, and 0.5 per cent. bad. Of the children examined at the last routine inspection of their school life 16.6 per cent. were excellent. The results of these returns are practically the same as for the past three years, and the report points out that the increased attention given to nutrition and the general rise of standards lead to the reporting of minor degrees of defect which in earlier years would have seemed normal or unworthy of notice. Variations in the standard of assessments make it difficult to give accurate comparisons, but there is no doubt that improvement has been made.

The steady increases in the tables of average heights and weights shown in nearly all the many reports from school medical officers in which such tables are given are striking evidence of the improvement in the nutrition of the school child in the country as a whole. Thus in Sheffield, compared with 1920, 5-year-old boys are on average nearly 2 inches taller and 3 lb. heavier, and 5-year-old girls 1.4 inches taller and 1 lb. heavier; 12-year-old boys are more than 2 inches taller and 9¾ lb. heavier, and the 12-year-old girls of 1938 are 3 inches taller and 12.4 lb. heavier than those of 1920.

[1] H.M. Stationery Office. Price 1s. 3d

Provision of Meals and Milk

The numbers of children in receipt of free meals or milk have continued to increase: 687,855 were fed in 1938–9, compared with 614,806 in 1937–8 and 535,300 in 1936–7. Of these 687,855 children, 635,174 received free milk and 176,767 free solid meals; of the latter, 124,086 received both free meals and free milk. These figures show that progress has been maintained, but it is still a fact that the provision made in many areas still falls far short of that recommended in the Board's Circular 1443, issued in December, 1935. It is fully realized by the Board and by all progressive local education authorities that not only does the listless mind of the ill-fed child evade teaching, but the best physical education will be frustrated if, in the most critical years of growth, its recipient goes short of the essential body-building foods.

An intensive survey of the measures taken by local education authorities in dealing with subnormal nutrition was begun by the Board in 1938, and its effect can be gauged from the continued increase in the numbers of children fed. Having pointed out to local education authorities that it is not enough to rely upon routine medical inspections (which may occur only three times in the child's school life) to ascertain if children are under-nourished, the Board advised that periodic nutrition surveys should be held at intervals of not more than six months, and that recommendations of children in need of feeding should be invited from teachers as well as from members of the medical and nursing staffs. Reliance on application by parents—still the only method of ascertainment adopted by some authorities—is entirely inadequate, and results almost invariably in large numbers of under-nourished children receiving no free supplementary nourishment.

The survey has shown, as had been emphasized in previous reports, that while in some areas the arrangements are well organized, in others the food provided, the service of the meals, and the place where they are served are all open to serious criticism. Some authorities rely entirely on the provision of free milk (too often only one-third of a pint), overlooking the fact that there are many cases in which milk alone is insufficient to meet the needs of the children, who in addition require free solid meals to restore and maintain their nutrition. The restriction on free meals in some areas by a severe income scale, which has often been in operation for many years without change, is condemned, and in such cases authorities are urged to make the scale more lenient.

The Milk-in-schools Scheme

On March 31, 1939, the milk-in-schools scheme was in operation in 86.9 per cent. of all the departments in public elementary schools. Less than 5 per cent. of the total number of elementary school children are in schools not covered by the scheme. On the same date 55.6 per cent. of all children in elementary schools were taking milk under the scheme, either free or on payment. While the numbers were increasing up to the outbreak of war, it is extraordinary that there should still be so many parents who do not grasp the opportunity to supply their children at half-price with a food so essential to health, growth, and development.

Medical Inspection and Treatment

At the end of 1938 there were 1,518 school medical officers and assistant medical officers, 1,065 specialists, 1,009 school dentists, and 5,431 nurses in the service of local authorities. The number of medical examinations during the year (including re-inspections) was nearly 5½ millions. Routine inspections show an increase of 0.8 per 1,000 in the incidence of skin diseases. This may be due to an increase of scabies, and medical officers are asked to note this point for investigation and comment in their reports for 1939. Many areas report considerable increase of this disease, the school control of which is difficult owing to reinfestation of children by contact with other infected members of their family. A new method of treatment is being tried in Liverpool which reduces the period of absence from school. More attention is now being paid by school medical officers to aural defects. A number of authorities have undertaken tests with a gramophone audiometer, with the result that many cases of slight and previously undetected deafness and disease have been discovered and treated.

Sixty-nine special investigations were undertaken by school medical officers during the year. Their titles indicate the many subjects of clinical and sociological interest which confront the service in peace time.

The School Dental Service

The continued expansion of the School Dental Service gives cause for satisfaction, yet much further progress will be required to be made before the service can be regarded as adequate. The process of education of the bulk of the population is a gradual one, but by dint of continued effort the large majority of children and their parents will in time doubtless be brought to realize the benefits of conservative dental treatment, both as regards the prevention of pain and as an aid to maintenance of general bodily well-being. Of the children requiring dental treatment, 65.5 per cent. of them received it, against 62.6 per cent. during 1937, but in many areas there is still a persistent refusal by parents to allow their children to be treated. Over 3½ million children were inspected during the year, and of these nearly 2½ millions needed treatment of their teeth.

Reports of Societies

EXTRA-ABDOMINAL RESECTION OF THE COLON

At a meeting of the Section of Surgery of the Royal Society of Medicine on January 17 Mr. V. ZACHARY COPE gave his presidential address on "Extra-abdominal Resection of the Colon." From an early period in the history of abdominal surgery, he said, it had been recognized that resection of a portion of the large bowel was more difficult and dangerous than excision of a segment of the small intestine. The procedure was made more hazardous by the fixity of certain parts of the colon, the great variation in size of the bowel, the presence of surfaces uncovered by peritoneum, and the semi-solid nature of the bowel contents; added to which was the fact that most cases of colonic disease came to the surgeon on account of obstruction which had been in existence for a long time before surgical advice was sought. After a very interesting survey of the history of his subject Mr. Cope discussed the present position.

Scope of Operation

Mr. Cope thought it might be concluded that the extra-abdominal method of colonic resection for cancer or other lesion could be carried out successfully on any part of the colon, though on the right side the ease and success of ileo-colic anastomosis gave an alternative and perhaps preferable method of operation in one or two stages. As Paul had stated, when undistended and fairly normal gut was being dealt with there was a field for resection and immediate suture, but even in those cases extra-abdominal resection could be carried out. Cases without much distension might be resected without any relief of tension, but when the distension was extreme it might be impossible to draw out the bowel without risk, and in such cases it was wise to perform a preliminary caecostomy. At the present time in America there was a tendency not to permit immediate drainage of the proximal gut; the growth was cut away at once after the application of clamps, which were left on until—being rather heavy—they fell off by their own weight. Rankin had given the name "obstructive resection" to this method, by which he had had excellent results. Mr. Cope had not seen the necessity for departing from Paul's technique as advised by Rankin, for in dangerously distended cases he performed preliminary caecostomy, and when there was only moderate distension the proximal cut end of the colon could be drained safely.

Present Technique

He said that personal experience had led him to the opinion that for any lesion of the colon accompanied by obstruction there was no procedure so likely to be followed by success as extra-abdominal resection, provided always that extreme distension had been overcome by a previous caecostomy or colostomy. For the past seven years he had adopted this method for all cases of resection of the colon (any part of which, with the exception of the lower part of the sigmoid, might be treated in this manner), and he had used a few special instruments which appeared to make the operation more easy.

After the bowel had been well mobilized through an adequate incision it was brought out of the abdomen and its mesentery ligated in sections at the base of the coil so as to remove lymphatic glands which might be affected. Care was taken that the base of the coil still had an active blood circulation so that the division of gut would be made without fear of necrosis. The parietal peritoneum was sewn by a few stitches to the afferent and efferent limbs of the coil and the wound closed, leaving enough room for the bowel to pass through the opening without being constricted. The bowel was then crushed at the determined places by means of a powerful crushing clamp with three blades (Fig. 1) and

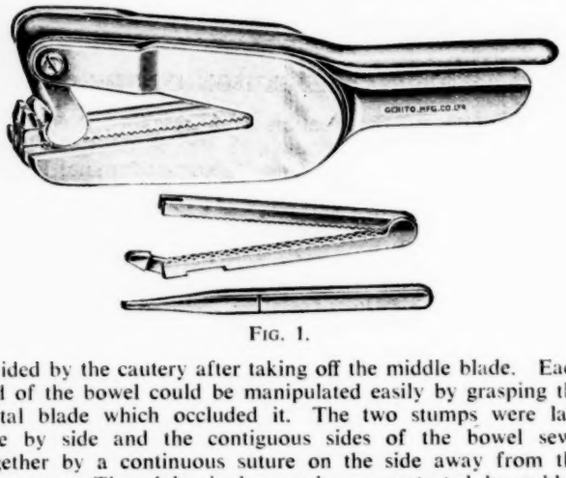


FIG. 1.

divided by the cautery after taking off the middle blade. Each end of the bowel could be manipulated easily by grasping the metal blade which occluded it. The two stumps were laid side by side and the contiguous sides of the bowel sewn together by a continuous suture on the side away from the mesentery. The abdominal wound was protected by rubber

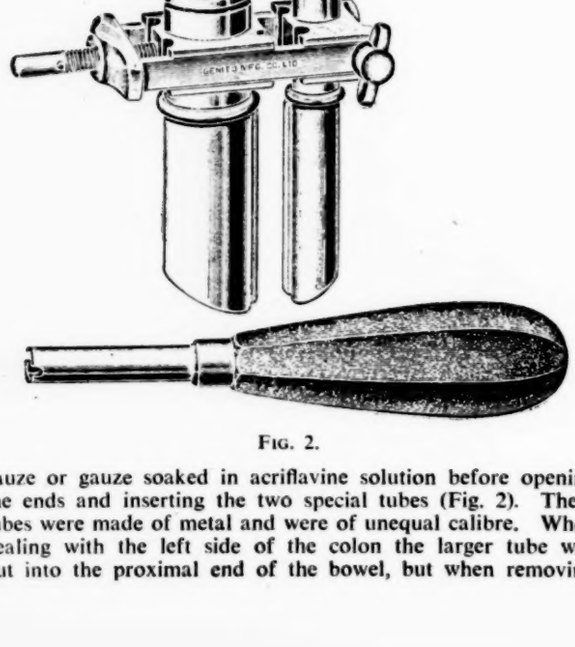


FIG. 2.

gauze or gauze soaked in acriflavine solution before opening the ends and inserting the two special tubes (Fig. 2). These tubes were made of metal and were of unequal calibre. When dealing with the left side of the colon the larger tube was put into the proximal end of the bowel, but when removing the end of the ileum and the right side of the colon the smaller tube was inserted into the proximal end of the ileum and the larger into the distal colonic end. The tubes were fixed in position by strong thread, silk, or catgut, which was stitched round the end of the bowel and tied tightly into the groove made for it on the metal tube. The external ends of the tubes were then fitted into a metal gate by means of which they could be approximated and firmly pressed together by screw pressure. On one tube was a raised ridge, on the other a linear depression, and they were placed in the gate in such a way that the ridge fitted into the depression and gradually brought about linear necrosis. Rubber tubing was attached to the end of the proximal tube. The deep ends of the tube, which were specially made oblique to avoid damage to the gut, should be within the peritoneal cavity. Each day after the operation the screw was slightly turned and pressure increased. The tubes generally came away in five or six days, leaving one opening and a divided spur. Ten days or a fortnight later the artificial anus was closed unless oedema and thickening round the wound made it advisable to wait a little longer. The mucosa was well separated from the underlying tissues and the whole thickness of the bowel wall exposed and turned in by a series of catgut sutures. The muscles of the abdominal wall were then united by separate catgut sutures and the skin brought together.

During the last seven years he had performed twenty-one resections of the colon: nineteen were single resections; in the other two he had also to resect the small gut. Of the double resections, one patient died of small-bowel obstruction which supervened when he was about to leave hospital, and the other died of peritonitis several days after a difficult operation. Of the nineteen single resections two were for volvulus, and the patients recovered so that they passed their motions the natural way without difficulty. Of the other seventeen, which were for carcinoma, all but one patient made a good recovery, in spite of the fact that some were feeble and elderly subjects. Of the likelihood of permanent cure he could not speak with authority, but he thought the results were likely to be as good in this respect as those attending other techniques.

Discussion

In a brief discussion following the address Mr. H. J. MCCURRICH said that there was one alternative which might be considered—namely, making a transverse colostomy before doing the resection, a method which he had used for years and which Devine had published. In such cases, provided there was no gross obstruction, he thought resection and anastomosis might be done at the same time. Cases in which caecostomy had been done sometimes failed to drain in the most inexplicable manner. Mr. J. P. LOCKHART-MUMMERY considered that there was always a slight danger in applying pressure gradually from the clamps, and if the mesentery got between the clamps there was considerable pain as they tightened up. He explained how he avoided getting the mesentery between the blades. Mr. Cope had suggested three inches as the distance at which the two limbs should be joined together. Mr. Lockhart-Mummery was inclined to make it a little longer. He did not think there was any advantage in tightening the clamp gradually. The clamp was a crushing instrument, not a cutting one; it crushed the two pieces of bowel, sealing them together, and there was no point in doing it slowly. Mr. W. H. OGILVIE said that he had been converted by Devine's writings and looked upon his procedure as a safer and more satisfactory method than the original Paul. Caecostomy did not seem to be quite sufficient, it did not entirely relieve tension, nor did it render the bowel sterile, and the criticism of Mikulicz was that the dissection of the glandular field had to be limited and the anatomical reconstruction was nothing like perfect. When dealing with people who were desperately ill the transverse colostomy was the best operation; it enabled one to get the site of the obstruction completely sterile, and, at a

time of one's own choosing, to do a radical resection of the whole glandular field. A safer end-to-end operation could then be done, because by that time the bowel was sterile and the patient fit. Mr. C. S. DORLING paid a tribute to Mr. Cope's clamp, which he had used during the last two years and which had never slipped.

Mr. COPE replied to the questions and explained why in his view a rapid exercise of pressure by the clamp was not desirable. The septum was vascular, and if the pressure was too acute there might be haemorrhage. With regard to pain in the mesentery, he had had one case in which, on tightening of the clamp, the patient had severe pain, which was relieved by injection of novocain into the spur region. He admired Devine's method, and if he was convinced that it would give a larger resection he would adopt it, but if a preliminary caecostomy was done a resection as wide as was desired could be obtained in all these cases. Devine's technique was a good alternative method, but if one was used to a technique which was satisfactory he thought one should stick to it.

[The instruments described above are made by the Genito-Urinary Manufacturing Co., 28A, Devonshire Street, W.1.]

RADIOLOGISTS IN CONFERENCE

Largely attended meetings of radiologists were held in London on January 18 and 19. The Faculty of Radiologists arranged two meetings, at one of which Mr. E. ROCK CARLING gave a highly appreciated lecture, the title of which was "Irradiation Assailed" (but it was not Mr. Carling who assailed it). The British Institute of Radiology held its two annual lectures, the one in memory of Professor Silvanus Thompson being delivered by Professor F. L. HOPWOOD, who dealt with the neutron and its possibilities, and the other in memory of Sir James Mackenzie Davidson by Dr. LEONARD ROWDEN, who discussed the value of *x*-ray measurements of the pelvis as an important ante-natal procedure. The Section of Radiology of the Royal Society of Medicine also held two meetings, one for a discussion on radiological examination in cholecystitis, and the other for a discussion on the treatment of metastases.

X-ray Examination in Cholecystitis

In the Section of Radiology Mr. ROBERT MCWHIRTER opened the discussion on this subject. He described the technique used in cholecystography at Edinburgh Royal Infirmary. If a straight film of the gall-bladder region discovered gall-stones further investigations with the dye (opacol) were only rarely made. When the more thorough examination was necessary it was the practice, on the evening before examination, to give the patient two grains of luminal with a view to diminishing the possibility of sickness after the subsequent ingestion of opacol. Then, immediately after a full meal from which fats were excluded, the patient was instructed to take the solution of opacol. No breakfast was given next morning, and the film was then made, fourteen hours after the dye had been administered; other films might be taken at two-hour intervals up to the twentieth hour. As soon as the gall-bladder shadow was seen to be of good density a fat meal was given and a film taken one hour afterwards. For the taking of the film the patient lay in the prone position on a flat-topped table equipped with a synchronized Bucky. The exposure, made on normal expiration, should not be longer than half a second. Before exposure the patient should be instructed to draw a little breath in, not a deep breath. A compression band should be used over the lower ribs. By means of an oblique film made with the right side of the abdomen slightly raised from the table calcification of the costal cartilages and renal calculi could be distinguished.

Mr. McWhirter suggested that a standard method of reporting films following cholecystography should be adopted. The report on the film after opacol had been given was concerned with the function of the gall-bladder. In too many hospitals the statement as to function was left to personal judgment. The absence of a shadow or the presence of a very faint shadow was a pathological indication; a good shadow suggested that the gall-bladder was healthy. Comparison with the shadow of the liver enabled the line of demarcation between the faint shadow and normal density to be drawn with reasonable accuracy. The three standard reports he suggested were a normally functioning, a poorly functioning, and a non-functioning gall-bladder. By normal function was meant that the density of the gall-bladder shadow was greater than that of the liver; by poor function, that it was less dense than the liver shadow.

In Edinburgh, over a period of three years, about 1,000 opacol examinations had been made. The following points emerged on a comparison of the operative or necropsy findings with the method of *x*-ray interpretation. If no shadow was cast by the gall-bladder, or if its density was less than that of the liver, disease was present in 98 per cent. of cases. In the normally functioning group the value of the method was less obvious. A point to be borne in mind here was that a gall-bladder might retain the power of concentrating the dye satisfactorily when it was partially diseased. In the majority of these cases there was only early cholecystitis present. A report that the gall-bladder was functioning poorly or not at all did not necessarily imply intrinsic disease of that organ. In about 7 per cent. of cases the gall-bladder was not primarily diseased and the failure to function normally was the result of disease affecting the liver, the common bile duct, or, in a few cases, extrinsic causes secondarily affecting the gall-bladder. Under the heading of extrinsic causes he included a large carcinoma of the hepatic flexure which was invading an otherwise healthy gall-bladder, and one case of fistula between the gall-bladder and colon. In his series four duodenal ulcers were found in the normally functioning group and three in the poorly and non-functioning groups. But the Edinburgh series was much too small to be conclusive. In a Mayo Clinic series, among a group of 350 normally functioning cases, duodenal ulcers were found in sixty, or 17 per cent. of the total, and out of 311 poorly or non-functioning cases duodenal ulcers were found in six; four out of these six had disease of the gall-bladder and two were normal. Thus the presence of a duodenal ulcer did not seem to influence the density of the gall-bladder shadow.

In a small percentage of cases the gall-bladder might cast a shadow dense enough to render it visible on the plain film. When this took place the visibility was due to a high calcium content in a diseased gall-bladder, such content being found only if the cystic duct was blocked. Similarly, calcification of the gall-bladder wall was found only in the case of such blockage. Opacol then was unnecessary, for no dye could enter the gall-bladder. Statements that the normal gall-bladder was visible on a plain film were usually due to a confusion with the shadow of the filled duodenal cap or the liver shadow overlapping the outer margin of the kidney. In his Edinburgh series there were two cases of carcinoma of the gall-bladder, and in these the gall-bladder was of the non-functioning type. Finally, as to the purpose of the fat meal, eaten as soon as the gall-bladder shadow became of good density, this was given to contract the gall-bladder and so make visible small stones and tumours.

Dr. H. H. W. GILLESPIE recounted his experiences with a dye of the quinoline group. It was fifteen years, he said, since Graham introduced sodium tetraiodophenolphthalein into radiology, but this was only one of the substances which might be made available. The solubility of such substances was important, and it might be assumed that the more soluble the substance the more easily it would be excreted. He had made trial of a sample of the quinoline derivative introduced by Professor Pribram, though not manufactured on a commercial scale. It was a yellow powder, tasteless, and apparently with no unduly toxic properties. His impression of the shadow produced with this dye was that it was unusually clear. The dye was given in smaller quantities than those necessary with the sodium compound. The films were made from thirteen to fifteen hours after administration. A certain number of students and patients on whom it had been tried

had experienced nausea, though apparently this was not so marked or so frequent as after the sodium compound. A disadvantage was that it was less easily soluble in water and required frequent stirring, but he thought it deserved further investigation, upon the result of which any final assessment must wait.

Radiation Treatment of Metastases

Dr. F. M. ALLCHIN opened the second of the discussions, which was on the treatment of metastases. He said that the attack made on the metastases was the crucial point in the treatment of cancer. It was generally acknowledged that cancer, in its early stages a localized disease, could be combated by accepted methods, among which radiotherapy was of increasing importance. In order that the best results might be obtained in the treatment of metastases all forms of treatment should be considered, and sometimes two or three forms of radiation treatment might be combined. It was important to investigate the state of the blood before treatment was undertaken and at regular intervals during the course. He was of opinion that sterilization of women under the age of the menopause in cases of breast cancer was of the utmost value. Metastases from breast cancer were always sensitive, those from prostate or kidney varied considerably in their response. In breast deposits a satisfactory result could often be obtained with doses much smaller than might be expected; in his experience massive doses were not called for in these cases.

The literature on the subject of metastases was scanty, and such writings as there were suggested that the metastatic focus was less responsive to full radiation doses than the primary from which it originated. Response to irradiation depended, among other factors, on the histological structure, which varied to a very high degree. No prediction as to response in many cases could be made from clinical or histological findings. Treatment should aim at full doses consistent with the general condition of the patient, which must be carefully watched, and appropriate medication employed throughout.

Dr. Allchin concluded by saying that in the present state of knowledge, when views now accepted might be radically modified or even rejected, it was quite impossible to lay down any stereotyped methods of treatment of metastatic manifestations. All the efforts of research workers were still needed, and in particular the efforts of radiotherapeutic researchers. The solution might lie in a combined effort in which the course of the disease was modified by some means—chemical, biochemical, serological, or physical—in order that the administration of the therapeutic agent might yield the more lasting results. Until this was reached they would continue to be confronted with numbers of unfortunate patients, and they could not merely stand by and say that nothing should be done. It was most important to endeavour to prolong life and relieve suffering by carefully planned radiotherapy.

Dr. M. C. TOD said that the possibility of cure or palliation in cases of metastases depended on the method of spread and on the radiosensitivity. The methods which might be considered as curative were regional therapy for tumours of high sensitivity and localized therapy for those of limited sensitivity. Tumours of high sensitivity might be divided into those of embryonal origin, such as seminoma; primitive tumours of unknown origin, such as Wilms's tumour of the kidney and some tumours of the thyroid gland, salivary gland, and nasal accessory sinuses; and, finally, tumours of reticulo-endothelial origin, such as lymphosarcoma, thymoma, Ewing's tumour, and endothelioma of vascular origin. *X*-radiation was always the method of choice in the treatment of highly sensitive tumours. She discussed in detail the methods of treatment of a radiosensitive tumour—namely, seminoma testis—and one of limited sensitivity—namely, spinal deposits from the breast. Four possible methods of palliative treatment were the following: (1) localized therapy for single deposits of sensitive neoplasms when more foci were known to be present; (2) a growth-restraint technique for resistant tumours; (3) a "chasing" technique (that is, the treatment individually of a series of secondaries as they appeared) for multiple secondary deposits following radical operation for carcinoma of the breast; (4) symptomatic palliative therapy. She mentioned in particular one case of Ewing's tumour of the ilium in a girl aged 8, with a secondary deposit in the lung. As a result of radiation treatment the tumour had disappeared, the lung was normal, and the child was now well except for a slight shortening of one leg due to interference with growth during irradiation of the epiphysis.

Dr. N. S. FINZI said that in the cases treated by radiologists many years ago any occasional cure was an accident. He meant that the methods were so uncertain that cure was not to be expected, although it did occur occasionally. He had one case in which a cure of a fairly localized deposit had now been maintained for thirty years. He also mentioned the technique now being pursued by Dr. W. M. Levitt at St. Bartholomew's, whereby the whole of the trunk was irradiated for some very sensitive deposits. Some striking results were occasionally secured, and Dr. Levitt had a number of patients who had lived for five years after treatment of generalized deposits of various radiosensitive tumours. It must not be supposed that there was any high proportion of cures in metastatic cases; nevertheless, cures did occur.

Correspondence

Make all Milk Safe

SIR,—The large-scale evacuation of children from town to country has raised a health problem of primary importance. Many of these children, brought up on safe milk—that is, pasteurized milk—in large towns are now in districts where raw and unprotected milk is supplied; they are thus exposed to the risk of contracting tuberculosis or other milk-borne disease.

About 2,000 deaths occur annually in Great Britain from bovine tuberculosis (which is carried by unsafe milk), and in the past twenty-five years there have been more than a hundred outbreaks of epidemic diseases, including scarlet fever, enteric, paratyphoid, diphtheria, and septic sore throat—all carried by unsafe milk. As recently as 1936 there were 718 cases of typhoid infection from raw milk; fifty-one people died. In 1929 a thousand families were affected in one town alone and sixty-five people died.

If all milk sold to the public were either boiled or efficiently pasteurized such outbreaks of milk-borne disease could never occur. The great advantage of pasteurization is that, while rendering milk absolutely safe, it does not materially affect its nutritive value. This fact is now generally accepted by enlightened medical and scientific opinion throughout the country, and is strengthened by the findings, recently published, of the Milk Nutrition Committee, which, after conducting experiments on 6,000 school children, found that there are "no differences between the nutritive values of raw and pasteurized milk of any practical importance."

In the face of such evidence it is obvious that steps should at once be taken, in the national interest, to safeguard this vital food by the pasteurization of all supplies, and in the meantime, where pasteurized milk cannot be obtained, heating the milk to the boiling point will make it safe.—We are, etc.,

C. O. HAWTHORNE, M.D.,
Chairman of Council of the People's League of Health.
OLGA NETHERSOLE,
Founder and Hon. Organizer.

London, W.1, Jan. 16.

Margarine and Butter

SIR,—With reference to Dr. Paull B. Pinkerton's letter appearing in your issue of January 13 (p. 72), I have been giving the subject deep consideration for some time as a responsible medical officer of health, and particularly in my office as honorary secretary of a very ambitious tuberculosis care committee, distributing extra nourishment in the shape of milk, eggs, and butter very liberally.

I am convinced that all our recent Milk Marketing Board schemes increasing the quality, the quantity, and the wholesale price of accredited milks have automatically increased the prevalence of home-produced infected tuberculous butter and cheese. This butter and cheese is to-day largely prepared from milk which has in many instances been the subject of a refused licence by the local authorities or the Milk Marketing Board as being unsuitable for distribution by reason of either its poor quality or the dirty methods of production or storage. Further, we have no guarantee that it may not have come from tuberculous cows turned out of the milk-producing herds supervised by the local authorities and the Ministry of Agriculture. In short, no standards have ever been enforced in the case of milk used for manufacture of butter or cheese.

We take infinite pains to protect our milk supplies from the cow to the consumer; but our butter and cheese are completely left out in regard to these safeguards. Margarine, on the other hand, is produced under closely supervised hygienic conditions, is standardized as to its vitamin content, and guaranteed tubercle-free. I have seen many samples of tuberculous butter. I have never found tuberculous margarine. —I am, etc.,

Darlington, Jan. 19. G. A. DAWSON.

Vitamin Content of Margarine

SIR,—Perhaps you would allow me the privilege of giving the answers to the questions which Dr. Paull B. Pinkerton (*Journal*, January 13, p. 72) asks about the vitamin content of margarine.

The digestibility of margarine, and of the fats and oils from which it is made, has been shown to be of the same order as that of butter—namely, 96 to 97 per cent. This fact is borne out by many exhaustive investigations in humans and animals, published in scientific literature during the past fifty years. Among the authorities that could be quoted are: C. F. Langworthy (Investigations by Office of Home Economics, Washington, U.S.A., 1923); Holmes and Deuel (*Bull. U.S.A. Dept. Agricult.*, 1915–22); Lundgren, Perander, and Putkonen (*Trans. Finnish med. Soc.*, 1921); Fridericia, Erlandsen, and Elgstrom (*J. Hyg.*, Denmark, 1917, **10**); Thoms and Muller (*Arch. Hyg.*, 1915, Germany); Central Scientific Institution for Nutrition, Moscow, 1933–4. Tests carried out on animals at our nutrition laboratories at Port Sunlight gave an average digestibility of 99.6 per cent., the maximum being 99.9 per cent. and the minimum 99.4 per cent. In these tests allowance was made for excreted fat from sources other than the diet.

On the question of the ingredients from which concentrates of the fat-soluble vitamins A and D are produced the facts are as follows. These vitamins are obtained in concentrated form from liver oils (from mammals and from fish), vitamin D being also used in the purified form from irradiated sterol. When these processes were first evolved a serious technical difficulty arose regarding their application, as the vitamins were not sufficiently stable to withstand the refining treatment necessary to make them suitable in flavour for incorporation in margarine. It took some eight years of intensive and very costly research before this problem was finally overcome. Naturally, therefore, the details of the actual processes have become very closely guarded secrets. In respect of vitamin potency margarine has an advantage over butter, inasmuch as it remains at the same level at all times of the year. Butter, as is well known, is richest at the time when Nature's sources of vitamin A are ample. The potency of margarine, in the case of the leading brands, is standardized to give at all times of the year the same vitamin potency as a good summer butter. I quite appreciate the point Dr. Pinkerton makes regarding the checking of margarine for vitamin value. So far as our own brands are concerned, not only are the concentrates used standardized by biological and other methods, but every consignment of margarine is carefully tested for potency before leaving the factories. The Ministry of Food is fully aware of the importance of ensuring an adequate supply of vitamins in margarine, although, so far as the possibility of Government tests is concerned, it is only fair to point out that such tests would involve a permanent extensive and very expensive organization.

Some time ago our technical staff prepared two booklets, "Why the Nation Needs More Fats," and "What is Margarine?" giving an impartial account of the main facts. These aroused great interest in medical circles, and we shall be only too pleased to send copies to any of your readers who have not already seen them.—I am, etc.,

J. P. VAN DEN BERGH,
Director, Lever Brothers and Unilever Limited.

London, E.C.4, Jan. 17.

Treatment of Varicose Ulcers

SIR,—It seems to me that those healing methods advised in recent letters to the *Journal* have missed even mention of the most important single factor making for success in treatment—namely, the imperative need to reduce venous congestion in the limb. This can best be achieved by absolute rest in bed with the use of high bed-blocks, and, in the ambulatory patient, by correctly adjusted elastoplast bandage. In cleanly patients, for the smaller size of ulcer, elastoplast can be a speedier means of cure than any; but in hospital practice such a bandage, besides being expensive, quickly becomes dirty and smelly, itself causing a troublesome dermatitis in some, and invariably the retention of pus, which can be removed only when the bandage is undone, a process usually avoided for as long as seems decently possible.

In most patients the best of all local dressings for leg ulcers, even in those having a positive blood Wassermann reaction—and they number quite a few—is starch iodide paste, which, combined with sufficient rest in bed, controls pain after twenty-four hours' use, allows of discharge in three days or so, and will heal even multiple extensive ulcerations of the leg of so hopeless an aspect as almost to compel amputation. The best formula for the paste is: starch, 1 oz.; glycerin, 2 oz.; distilled water, 6 oz. These are boiled together and, when nearly cold, half an ounce of strong solution of iodine (*B.P.* 1885) is stirred in. The result is a cheap, non-greasy, homogeneous paste, clean in use, which is spread even half an inch thick on to the smooth surface of lint and applied, then covered with wool and a very firm bandage.

Those with a positive Wassermann reaction need, of course, general treatment. Acute and chronic tuberculous ulcers of the leg and ulcerations caused by Bazin's disease will do better with the use of crude cod-liver-oil soaks; but, except perhaps in these cases, the only application required to heal any varicose ulcer is this paste. However, for all leg ulcers, no matter how caused, absolute rest in bed, using high bed-blocks, is a first necessity. In extensive and chronic cases of ulceration of the leg of varicose origin, after healing is complete and the larger veins are sclerosed, what will best prevent recurrence is a tightly applied bandage and, at nights, the use of low bed-blocks. At the skin out-patient department of the Royal Victoria and West Hants Hospital, for many years now, this simple inexpensive method in the treatment of varicose ulcers has been found to be all that was necessary to secure speedy healing.—I am, etc.,

Bournemouth, Jan. 21. S. WATSON SMITH.

SIR,—In reply to Dr. F. F. Hellier's criticism, in the *Journal* of January 6 (p. 34), of my last letter (December 23, 1939, p. 1253) I would like to point out that by "cutting-off of the blood supply" I meant, of course, the elimination of the morbid venous circulation in the neighbourhood of the ulcer —not the stoppage of the arterial blood flow. It is only thus that the "squeezing-out" of the oedema, as Dr. Hellier calls it, can be successfully accomplished. As regards his second point—that the discharge oozes through the bandage and hence is not retained—the amount of discharge which does so is infinitesimal, since the elastoplast layers soon become saturated and thereafter, stiffened with the discharge, form an impervious occlusive barrier over the ulcer, keeping the greater part of the discharge dammed up and offensive. Anyone who has removed an elastoplast from a copiously discharging ulcer can testify to this.

Dr. Hellier further states that he applies elastoplast even when there is eczema present. This is a curious statement from one in charge of an ulcer clinic. I would recommend him to peruse the very lucid letter of Dr. F. A. E. Silcock (December 16, 1939, p. 1205), who gives the apt description of "Blitzkrieg" to the orgy of scratching and bandage-stripping which the patient would indulge in if his (or her) eczema were covered by an adhesive bandage. This would surely be a case, in the effect it would have on the unfortunate skin, of adding insult to injury. As Dr. Silcock rightly says, the effect of elastic adhesive bandaging or zinc-oxide plaster, even on sound skin, is at times highly irritating, as I myself well know, having as a child had an umbilical hernia treated by the pad-and-adhesive-strapping method, when the irritation used sometimes to drive me nearly mad.

I would advise Dr. Hellier to induce in himself a patch of dermatitis and then to cover it with elastoplast before making statements like these, which are not only silly but irrelevant, since the question at issue is whether or not septic intoxication can be produced by the retention of the discharges.

It is the rubber-containing adhesive bandage that I am really up against; the "viscopaste" and "cellanband" types, being more porous, are sometimes productive of strikingly good results, but even their employment, when there is much eczema present, appears to me to be undesirable, since their removal, attended as it invariably is with more or less pulling of the skin, is hardly likely to do otherwise than irritate the eczema.—I am, etc.,

Leamington Spa, Jan. 11. J. R. A. DAVIES.

Treatment of Infected Burns

SIR,—I was interested in the informative article by Surgeon Lieutenant B. C. Murless (*Journal*, January 13, p. 51) on the treatment of infected burns. There is an aspect of the treatment of recent burns on which the textbooks, displaying a dreary sameness and suspiciously empirical precision, remain almost silent, and for information on which I seek the hospitality of your columns. I refer to the treatment of cases of fourth- and fifth-degree burns in which the charred material remains firmly *in situ*, removable only with the greatest difficulty, and forming, apparently, a perfectly satisfactory coagulum inferior to that produced by tannic acid only in its lack of flexibility. I appreciate that such a coagulum consists only of tissues actually destroyed by the burning, whereas that produced by tannic acid aims at including a layer of tissue which, having survived the lethal effects of the heat, has since been coagulated by the penetration of tannic acid; and yet I doubt whether this is an important difference in deep burns of the type to which I am referring and in which no sensitive nerve endings remain beneath the charred material.

As regards the absorption of toxic substances from the deep part of the burnt area, is it not immaterial whether these substances have resulted from tissues coagulated by heat or by tannic acid? The prevention of fluid loss—the third objective of the tannic acid treatment—is, I am sure, at least as efficiently ensured by the rigid, inelastic natural coagulum as by the artificial. It would appear, therefore, that in burns of this type the coagulum produced by the application of tannic acid can have little or no advantage over that resulting naturally, and that both depend for their efficiency primarily, as your correspondent suggests, upon the supporting and immobilizing qualities which are so successfully employed in the closed plaster treatment of wounds. In spite of this we are cheerfully advised by our textbooks to remove the charred material—an undertaking often requiring a degree of violence likely to exhaust the surgeon almost as much as the patient, and to proceed with our spraying. It is on the soundness of this advice that I would welcome information. In conclusion I would like to refer to an illustrative case which recently came under my care.

A lady of 72 years, having taken for breakfast, as was her custom, half a pint of gin, fell into the fire and remained there for several minutes. When I saw her half an hour later she was not at all shocked and was practically free from pain. Her right shoulder and arm and the upper part of her back were very severely burnt and were of wooden hardness. There was a small split on the point of the shoulder through which charred fat and muscle could be seen. The total area burnt was about two and a half square feet. She was given an anaesthetic, and I began—and soon abandoned—an attempt to excise the charred material, for it was so hard that I was unable even to enter the point of a knife into it. Since I was surrounded by a collection of A.R.P.s and V.A.D.s and others equally aware of what the book said about it, and who, moreover, intended to see that fair play was done, I must confess that I applied a symbolic dressing of tannic acid gauze over the hard black burnt material and so escaped their wrath. Since then the lady has been allowed to continue her bibulous habits, and has done remarkably well. The charred material started to slough away on the ninth or tenth day and revealed an extensive but clean granulating surface which is marred only by the presence of the denuded spine of the scapula in its midst. This will present a problem, but otherwise the area could soon be healed by "pinch" grafting. The patient was apyrexial throughout.—I am, etc.,

Woodford Green, Jan. 17. JOSHUA S. HORN, F.R.C.S.

SIR,—I read with great interest the article by Surgeon Lieutenant Murless on infected burns in your issue of January 13 (p. 51). He suggested that they should be treated with tannic acid, comparing this method with the occlusive plasters of Dr. Trueta for compound fractures. The point which particularly interests me is the rapidity with which the septic process under the tan subsided in his cases. I have only a little personal experience of such cases, but it was not such a happy one. The pus ultimately disappeared, but after a much longer time than the few days mentioned in his article.

I should be much interested to hear of other experiences with this method, as in many ways it seems such an excellent treatment for these very difficult cases.—I am, etc.,

FRASER SINCLAIR.

North Riding Infirmary, Middlesbrough, Jan. 20.

Cod-liver Oil in the Treatment of Burns

SIR,—The modern tannic acid treatment of burns, based on the mutual coagulation of proteins and tannic acid in an aqueous system, has led to a wide-scale abandonment of oily dressings such as the water-in-oil emulsion known as carron oil. Paraffin-wax dressings are also now discontinued.

Since the primary aim of the appropriate dressing is to seal damaged tissues, the efficacy of tannic acid on the one hand and the "failure" of oily media on the other appear to be rational observations. Surprise, therefore, has been expressed at the more recent adoption of crude cod-liver oil as a first-aid and final dressing. Several authorities have reported good results with this oil in the treatment of thermal burns (Holmes, *Ind. Med.*, 1937, **6**, 77; Cabanac, *Arch. Soc. méd. biol. Montpellier et Languedoc*, 1937, **18**, 38; Löhr, *Zbl. Chir.*, 1934, **61**, 1686), and "satisfactory results have followed the use of crude cod-liver oil in the treatment of comparatively small mustard-gas burns after evacuation of the blister and removal of dead skin; the healing of the burns was rapid" (*Medical Manual of Chemical Warfare*, London, H.M. Stationery Office, 1939, p. 33). However, no satisfactory explanation has been advanced for what at first sight would appear to be a retrogression in technique. Indeed, Mitchiner (*The Modern Treatment of Burns and Scalds*, London, 1935) states at page 17: "It is difficult to see, however, how this oil can achieve better results in the prevention of collapse than any other greasy preparation, for *it has no coagulant action*" (italics mine).

I believe that a rational explanation of the effect of cod-liver oil (apart from any possible value due to vitamins or other chemical agents present in minute quantities) is to be found in the observations of Ascherson published a century ago in *Archiv für Anatomie und Physiologie*, 1840, p. 44. An English translation of this remarkable paper, with views far in advance of its time, yet fully substantiated to-day,

appears in *The Foundations of Colloid Chemistry*, edited by Emil Hatschek (London, 1925), page 13. Ascherson says: "With a pleasure which will be readily understood, I made the important discovery that coagulation in form of a membrane occurs inevitably and instantaneously when albumin comes into contact with a liquid 'fat.'" The property of forming membranes by such dineric interfacial contact he called "hymenogony," and the membranes thus formed "haptogen" membranes.

There is no doubt whatever concerning the accuracy of Ascherson's experimental evidence, and I have a photograph taken by Morse in my laboratory showing the instantaneous film formed at the interface between olive oil and aqueous egg albumin.

Thus there is a physico-chemical parallelism in the tannic acid treatment and the oil treatment, one forming a coagulum by mutual precipitation of colloids from their aqueous environments, and the other forming elastic membranes by interfacial precipitation. The theory of such dineric films is treated by me in *The Theory of Emulsions and their Technical Treatment* (London, 1935, p. 175 et seq.). It would be anticipated on theoretical grounds that the introduction of polar groups into the oil molecule would favour interfacial membrane formation; iodized oil might prove particularly effective.

The explanation given above applies equally well to the recent so-called "foille" treatment of burns introduced by the Carbisulphoil Company of Dallas, Texas, "foille" being a water-in-oil emulsion containing 3.4 per cent. of water and 90 per cent. of vegetable oil, stabilized by calcium ions.

That paraffin wax should fail would be anticipated on physico-chemical considerations, as the liquid condition of the wax is not maintained and tissue penetration is not effected. Mere surface sealing is without value. It is open, too, for experiment to determine whether interfacial coagulation is as effective with a liquid non-polar "oil," like melted paraffin wax, as it is with the vegetable and animal oils.—I am, etc.,

London, W.C.2, Jan. 15. WILLIAM CLAYTON.

Treatment of Fractured Femur at Site of Casualty

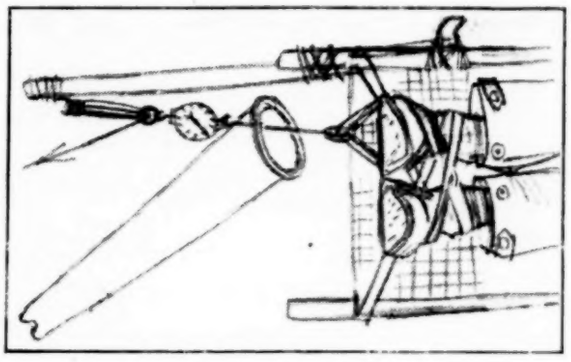
SIR,—I am glad that you have published afresh Dr. F. B. Chavasse's description of his method of treating fractured femora on the field of battle (January 6, p. 25). Having regarded it as eminently practical ever since reading the original article, I have described it to successive ambulance classes year by year. More recently I have worked at it with the local St. John Ambulance Brigade. We set ourselves to transfer such a supposedly broken and fixed-up limb from Dr. Chavasse's rig to the orthodox Thomas splint without relaxing the extension already on it. The pull we found was of fifteen pounds, and after the transfer it was thirteen, having never fallen lower between.

I would suggest, therefore, to Dr. Chavasse and all who desire to practise his method that provision should be made in advance for the transfer. It would suffice to put a long-folded triangular bandage round the ankle, as recommended for a Thomas, before fastening the stretcher strap round the feet. Or, of course, the spike supplied, passed through the boot, would do as well, if not better, were the other foot not likely to be damaged by it.

A hook, or loop of strong cord, would, to make the transfer, have to be put through the loop of bandage at the sole of the foot. A crutch is tied to the pole of the stretcher, projecting straight out beyond the end, and from the end of it independent extension is established by means of a strong cord which has first been threaded through the ring of the Thomas splint. The original stretcher sling is now taken right off both ankles and the splint worked gently up the limb till it is both firm and comfortable against the tuber ischii. The ordinary extension is then set up from the loop below the foot (or spike) to the far end of the splint.

I have just got a friend to make the enclosed sketch. (The spring balance is shown for experimental purposes.) It shows the Thomas splint with the temporary extension cord threaded through its ring. As the stretcher strap is loosened this new cord is tightened (see arrow), and the strap removed when the pull on the cord is thought to be enough. It must be generally admitted that any relaxation of extension would start up spasm again in the muscles of the thigh.

Another point I have in mind is that some advocate the application of counter-extension from the armpits instead of the groin. They allege that it is both better and more



comfortable. This I desire to challenge. What part of the anatomy is firmer than the pelvic bones, and more suited to bearing pressure? And, as to comfort, I have tried it myself, putting one leg through the loop of a new stretcher strap fastened over the hook of a spring balance. I got ten of my twelve and a half stone of weight on to it, and was forced to admit the severity of the pressure; but five stone of weight seemed child's play, and surely that would more than suffice in real life! And this was without any padding but my indoor clothes. The shoulders are far too mobile for such a purpose, and if the man is too feeble to hold them down and the arms are tied to the sides, the brachial arteries cannot conceivably escape compression. If the shoulders go up, a full three inches of extension is lost.—I am, etc.,

Doncaster, Jan. 7. W. REGINALD WILSON.

Relapsed Alcoholists in the Services

SIR,—Since the outbreak of war cases have come under my observation of dipsomaniac former officers who after rejoining the Services have relapsed. This unfortunate occurrence seems completely to nonplus commanding officers, medical officers, and medical boards, who have no instructions on how to deal with such cases. Naturally no one wishes to deal harshly with them or to involve them in disgrace, yet everyone realizes the danger of retaining their services, and especially of allowing them to proceed over-seas. Does their relapse call for disciplinary or for medical action?

The relapsed ones themselves recognize their danger and seek to be allowed to resign their commissions; but how can this be done in time of war? No one seems to know what course should be adopted in the best interests of the individual and the Army. As an illustration of the present anomalous state of affairs I would quote the following case:

A man of 28, previously a regular officer, who had resigned his commission some years ago, rejoined his regiment last June, when war seemed imminent. He relapsed, owing to emotional excitement, just before his regiment went to France in September. On this account, instead of going with his regiment he was sent to the training centre, where, naturally enough, the relapse went from bad to worse. He begged his C.O. to get his resignation accepted in order that instead of further disgracing himself he might be treated again for alcoholism and thereafter join some other regiment as a private. He was given leave by the week, during which time he voluntarily put himself under treatment. As after more than a month no news regarding his proffered resignation came through he wrote to his C.O. and was informed that he would shortly be medically boarded. Last week he was summoned to a board, but the board had no documents other

than a brief note from the M.O. of the training centre. He was found physically fit, but after some discussion the president of the board confessed that he did not know what to do. He felt unable to "board him out," and finally decided "to recommend him as unfit for general service for six months." No arrangement or stipulation was made as to how or where the six months should be spent, but the man of his own accord returned to continue treatment.

In the absence of any definite Army instruction on the point there must be a number of similar perplexing and perplexed patients, who are only too likely to bring disgrace upon themselves and their friends. I therefore seek through the publicity of your columns to draw attention to their precarious position. I would suggest that the competent military authorities, unless they regard relapse from the purely disciplinary point of view, should avail themselves of the facilities offered by an approved institution where these alcoholists who relapsed on return to Service conditions could be investigated, reported upon, and, if thought advisable, treated either at their own or the public expense.—I am, etc.,

Caldecote, Jan. 11. A. E. CARVER.

Endotracheal Anaesthesia

SIR,—The reply of Sir Harold Gillies and his colleagues in the field of plastic surgery (*Journal*, January 13, p. 69) to Sir Robert Kelly's adverse criticism of the modern method of endotracheal anaesthesia speaks for itself. The opinion expressed in this reply will be endorsed by the majority of surgeons and anaesthetists who have a sufficiently wide experience of both insufflation (after Meltzer and Auer) and inhalation through a wide-bore rubber tube. It would be superfluous therefore for me to reiterate the points in endotracheal anaesthesia technique already published by me in the *British Medical Journal* and elsewhere.

Redoubtable champion of oral intratracheal insufflation though Sir Robert Kelly may be, the fact remains that the wide-bore rubber tube through mouth or nose has almost universally displaced the catheter cum positive pressure method of Meltzer and Auer, thus leaving Sir Robert in the position of the recruit who complained that everyone was out of step but himself.—I am, etc.,

London, W.1, Jan. 22. I. W. MAGILL.

The Alcohol Sterilization of Insulin Syringes

SIR,—The results published by Professor J. W. Bigger, Professor J. W. S. Blacklock, and Dr. H. J. Parish in the thorough investigation of inoculation technique (*Journal*, January 20, p. 79) must cause serious reflection to those responsible for patients on daily injections of insulin from syringes and containers whose "sterilization" depends entirely on alcohol, most commonly industrial spirit, 95 per cent. alcohol. The vast majority of my own patients use this method, and it is recommended in my books. During the last five years, when many millions of injections have been self-administered by these patients, I have seen only one case of local abscesses caused by the abundant growth of an unusual yeast-like organism in a bottle of soluble insulin (Leo). Whether this was present in the unused bottle or introduced by the patient at the first injection will never be known exactly. Some of these patients are far from clean, often neglect their syringes and let them go dry, seldom clean the cap of the insulin phial, and so I suppose we must ascribe their complete immunity to infections to the tissues' powers of overcoming a few odd organisms, to the rarity of pathogenic organisms on the even dirty human skin, and to the merciful presence of tricresol in the insulin phial.

So I think that the practical proof of the pudding does remove the qualms caused by reading Dr. Bigger's article, and I see no need to insist on an impeachable bactericidal technique. The latter would require some twenty minutes in the preparations and carrying out of an injection instead of thirty to sixty seconds. It would make quite impossible the usual existence of many insulin patients who on business or pleasure must take their injections in restaurants, railway lavatories, and other septic areas. The usual technique is a risk I have taken personally for seventeen years, and so feel the risk negligible.—I am, etc.,

London, W.1, Jan. 22. R. D. LAWRENCE.

Treatment of Bacterial Carriers

SIR,—Detection of the carrier in the case of typhoid fever has been greatly simplified by the method devised recently by Felix and Bhatnagar, but unfortunately no satisfactory method for the elimination of the carrier menace appears to be available.

Living typhoid bacilli have sometimes been eliminated from the bowel by cholecystectomy, but this can only occasionally be adopted. Disinfection of carriers has been attempted by many different methods during the past twenty years or more, and the subject is fully discussed in a special report compiled by C. H. Browning, R. Cruickshank, and others, and published by the Medical Research Council in 1933. These methods included chemotherapy intravenously and attempts to destroy the typhoid bacilli in the intestine by antiseptics such as acriflavine and phenol preparations, or by the action of other bacteria introduced into the alimentary tract. Vaccine therapy has been found to be useless; and other methods, such as *x*-ray therapy and administration of bacteriophage, have been tried with no definite results. The difficulty of eliminating the bacilli can be readily understood if it is realized that in the carrier virulent bacilli remain living as internal parasites, in a condition of symbiosis, in the cytoplasm of reticulo-endothelial cells, where they are completely protected from contact with bactericidal antibodies or chemical agents.

Immunologists are well aware of the great difference in the immunological response to bacterial vaccines or toxins among different individuals, human or animal. Felix and Bhatnagar found that highly virulent typhoid bacilli containing Vi antigen which, when living, are inagglutinable by the serum of the normal individual containing H and O agglutinins are also resistant to destruction by phagocytosis, the virulence of the bacilli in the carrier being balanced by the phagocytic potency of the reticulo-endothelial cells in which they are living.

It would seem probable, therefore, that if it were possible to increase directly the phagocytic potency of the cell the bacilli would be destroyed with resulting sterilization of the carrier. Is it possible to produce such an effect by treatment with a hormone? The influence of the suprarenal cortical hormone in increasing resistance to infection has attracted attention in recent years. It was shown by Swingle and Pfiffner in 1930 that adrenalectomized animals become extremely susceptible to infection; and evidence from different sources suggests that the metabolic activity and immunological responsiveness of reticulo-endothelial cells can be increased by injection of an extract of the suprarenal cortex. This extract does not increase leucocytosis. Whitehead and Smith in 1932 found definite improvement after treatment with cortical extract in typhoid fever, undulant fever, and erysipelas, and beneficial effects have also been reported in cases of pulmonary tuberculosis, diphtheria, scarlet fever, and influenza. C. A. Fox and R. W. Whitehead (*J. Immunol.*, 1936, **30**, 851) demonstrated the effect of cortical extract in increasing the immunological response in rats and rabbits. The administration of cortical extract in rats which had previously received one injection of sheeps' corpuscles caused an increase of 70 per cent. in the titre of haemolysin as compared with controls, and similar results were obtained in rabbits. There is also evidence that convalescence in various diseases was hastened by the use of this hormone. A remarkable example of this effect was given by Dr. Najib-Fahrah (*Lancet*, 1938, 1, 777). He treated fifteen cases of enteric fever, including seven of typhoid, three of paratyphoid A, and five of paratyphoid B, and three cases of acute *B. coli* infection by intravenous injections of adrenal cortical extract (eschatin, P. D. and Co.) together with vitamin C. The effect was dramatic from the first injection, and no pain, shock, or other reaction was produced. Symptoms disappeared rapidly, with a gradual fall of

temperature to normal, usually within seven days. In one case vomiting continued after the fall of temperature, and in this and in two other toxic cases injection of glucose and saline were given. All made a quick recovery except a patient whose condition was already desperate when the treatment was started.

If, as seems possible, the effect of treatment with the suprarenal cortical hormone is to increase the phagocytic and immunological activity of the reticulo-endothelial cells, it might be the ideal treatment of the carriers. I am not aware that the hormone has been used for this object, but a thorough trial should be well worth undertaking, and the effect could be estimated by the appearance of a negative response to the agglutination test for the antibody. If successful in the sterilization of the typhoid carrier it would probably be equally successful in the case of diphtheria or other carriers.—I am, etc.,

Worthing, Jan. 8. HERBERT H. BROWN.

Night Blindness and Vitamin A

SIR,—I should like to emphasize the clinical importance of a sentence in your annotation on night blindness and vitamin A in the *Journal* of January 6 (p. 20). In it you state that it was found that intractable cases might be cured by massive oral doses of about 100,000 I.U. per day, or by a single intramuscular injection of that dosage. Such enormous doses are difficult to give by the mouth, while intramuscularly they are easily administered and absolutely safe. Being, I believe, the first person in this country, and perhaps in any, to publish (in 1933, M.D. Thesis; and *Lancet*, 1938, **1**, 599) any study of the clinical effects of injections of vitamins A and D, I have constantly urged that if we wish to obtain in man the results from these vitamins which are suggested by animal experiment we must be willing to give them by intramuscular injection. When so administered the clinical effects can be noted in a matter of hours, and sometimes even of minutes, instead of a slow process of weeks or months when given by the mouth. Having given over 3,000 of these injections in my own practice during the past nine years, I believe that such injections (most conveniently given as vitamins A and D combined in the preparation dekadexolin) are one of the few therapeutic measures of which it can be said that they can never do any harm—apart from causing occasional local discomfort—while they sometimes produce dramatic benefit.—I am, etc.,

Winsford, Cheshire, Jan. 10. W. N. LEAK.

Diabetes and Renal Disease

SIR,—Now that Dr. J. P. Bose (*Journal*, January 6, p. 35) has added his observations to those of Drs. R. D. Lawrence and W. G. Oakley (November 4, 1939, p. 929) I feel called upon for some reply, especially as he accuses my innocence of being "likely to mislead the general medical public"! I was led into the investigation of these two cases by finding a relatively low specific gravity in the urine of a patient passing sugar. My interest centred in what was happening in the kidneys. What I had to say about this depended upon the measurements which I published. My idea of the events which took place was no less surprising to me than apparently it proved to the doctors who were stung into correspondence by its publication. I submit, however, that the answer to a measurement is other measurements and not simply the statement that authority is not of this opinion. It is my impression that these cases are by no means rare. The resources of the diabetic clinic of King's College should make it possible to collect six cases of nephrosclerosis with diabetes and to measure the sugar thresholds of the kidneys. The report of these measurements would instruct and not merely contradict me, and I must admit I prefer instruction.

With regard to the diagnosis in Case 2, I admit, of course, that some degree of cardiac insufficiency was present. But I am not of the opinion that when a diagnostic label has been put upon a case all is explained. I think that with old people, severely ill, there is often gross dysfunction of more than one system. In respect of Case 2 I was at the time satisfied that the type of kidney dysfunction which we speak of as nephrosclerosis was present. But Drs. Lawrence and Oakley can easily get over this by choosing their own cases to suit their own criteria and measuring for themselves.

The physiology of the process should, I think, be accepted as being as I have described until such time as other measurements can be produced to show that my results were anomalous. So far, however, as the therapeutics and prognosis are concerned the position is different. The therapeutic question is whether insulin is necessary with a lowered threshold. In other words, is it the peak or the trough of the sugar wave which is the more important to cellular nutrition, or have we to care for both, indicating an adequate but guarded use of insulin? As for prognosis—well, I agree two cases won't tell us much about that.

Finally, I must question one assertion made in Drs. Lawrence and Oakley's letter. I mean, that vomiting and ketosis lowers the renal threshold to sugar. What sort of evidence have they for this most startling statement?—I am, etc.,

Coventry, Jan. 17. K. E. BARLOW.

Enuresis

SIR,—Some interesting points have been raised by those correspondents who disagreed with certain statements in my article on enuresis. The remarks of Dr. Malloy—to the effect that "when cured promptly by suggestion, as he should be, he can have a drink of tea before going to bed if he likes and lie with a full bladder all night without wetting"; a little further on, "I say: Teach the child by suggestion to keep his sphincter closed during sleep"; and again, "The aim should be to get rid of the complaint at one sitting by suggestion"—are particularly important because they suggest that he has some special technique of suggestion which really works. If this is so he would be conferring a great benefit on all of us if he would tell us in detail exactly what he does and says to the child in order to achieve the cures that he claims he can get at one sitting. A symposium on enuresis held by the Psychiatric Section of the Royal Society of Medicine two or three years ago, in which most of the leading children's physicians and psychiatrists and social workers took part, failed to reveal any satisfactory method of cure by suggestion in the majority of cases, and emphasized the long period of treatment usually required by a combination of other methods. How would he "teach the child by suggestion to keep his sphincter closed during sleep"? I do not quite see why a chamber beside the bed should appear as a "bogy"; surely it is a comfort to the child to feel that it is available should he need it in a hurry. The passive endurance of wet clothing is not the same thing as being expected to take some active part in dealing with them.

My proposal that all children should help to make their beds is intended to avoid any discrimination between the enuretic and his more fortunate fellows. It is surely not cruel but wise to train us when we are young to develop a reality sense, and to this end we have to learn that all our acts, whatever their motive or justification, bring their own inevitable consequences in their train. For example, if we go out into the rain without an umbrella because we have lent it to a friend we shall get just as wet as if we had merely forgotten it or been too lazy to bother to take it with us. Similarly, whether we wet the bed because we are lonely and unhappy or because we have cystitis or for any other reason, there will be a wet bed which has to be dealt with by someone. To encourage the child to ignore the consequences of any of his acts is to perpetuate the dangerous tendency to escape from unpleasant realities into fantasy.

In regard to my remarks on daytime wetting, I was of course speaking of those cases in which it is an habitual occurrence, and not of the rare instances which happen to nearly all children when they are placed in a situation where their modesty makes it difficult for them to ask to go to a toilet, or when they are subjected to any special stress or anxiety. In regard to fluids, my suggestion was that they should not be restricted as to total quantity but that they should be spaced so that the lesser quantity was taken towards

evening; this does not seem to me illogical, as one of your correspondents thinks it to be.

It is rather surprising to find that my article was thought to suggest harsh treatment when in fact my sole object in writing it was to stress the need for sympathetic understanding of the child's psychological difficulties.—I am, etc.,

London, W.1, Jan. 20. DORIS M. ODLUM.

New Treatments

SIR,—In these days of general apathy and of changing medical fashions a little healthy criticism of the experiments on human beings is required. Such experiments are the concern of all medical men, and to my mind each of us is in the position of being an "onlooker" and consequently must share some responsibility in the matter. I refer particularly to electrically induced convulsions as a treatment—treatment, mark you!—for schizophrenia, paraphrenia, agitated melancholia, and not only these states, but also recurrent toxaemia and hysteria. Can any experiment be more illogical and unscientific than this?

I should like it placed on record that at least one medical practitioner hopes that this "infectious" experiment will not spread to all mental hospitals and be carried out on thousands of patients.—I am, etc.,

KENNETH HAZELL,
M.R.C.S., L.R.C.P., D.P.M.

Fordham, Ely, Jan. 20.

Obituary

HERBERT CHARLES, M.R.C.S., L.R.C.P., D.A.

Consulting Anaesthetist, Middlesex Hospital

The death on January 13 of Herbert Charles, anaesthetist to the Middlesex Hospital and the Royal Masonic Hospital, is a great loss to the profession. Genial, generous, and exceedingly kind-hearted, Charles as a young man was gifted with a fine physique and great strength and endurance. He was well known in those early days as a racing cyclist, and for a time held the world records for twelve and twenty-four hours riding tandem on the road. Entering the profession at a later age than most students, he received his medical education at Middlesex Hospital. He qualified M.R.C.S., L.R.C.P. in 1906, and took the D.A.Eng. in 1935. After holding a house-surgeoncy at the Middlesex, he became one of its honorary anaesthetists, which appointment he held up to the age limit, when he was placed on the consulting staff. A keen Freemason, he was the first anaesthetist appointed to the Royal Masonic Hospital when that institution was founded, and he continued active in its service to within three weeks of his death.

In assessing the calibre of an anaesthetist, technical ability, the faculty of what is called "clinical instinct," and temperament have all to be taken into account, and judged on this standard Charles was a very great anaesthetist indeed. Equally at home with the drop-bottle and "Clover" as with the complicated apparatus that has replaced them, and adept in all the various forms of inhalation and injection anaesthesia, he combined in himself the virtues of both the older and newer schools of thought in the practice of anaesthesia. It is unfortunate for our profession that, as advance succeeds upon advance, it too often happens that the old is so utterly put aside that not only its faults but its merits too are consigned to oblivion. With each step forward we generally slip back a little as well. The disuse of chloroform, which for certain operations is still the best of all anaesthetics, is an instance, and the death of Charles diminishes the already small band of expert chloroformists. Though the faculty of what is called "clinical instinct" can up to a point be acquired, yet in its highest degree it is a gift beyond observation and study—a power peculiar to a few individuals, not communicable to others, and in its origins not understood by the individual himself. An anaesthetist who has this gift is like a steersman sensing the rocks and shoals in an uncharted sea, and Charles possessed it. His temperament was ideal for his calling: never ruffled or flurried or uncertain whatever the surprise or emergency, and steady as a rock under all conditions. By force of circumstance every anaesthetist, more or less, becomes particularly expert in certain classes of case, and some may even be termed specialists within their specialty. Charles, though truly a general anaesthetist, had exceptional practice in the surgery of the breast and pelvis. His experience of Wertheim's operation was far beyond that of any other anaesthetist, for he administered without a death full ether combined with spinal anaesthesia to between 500 and 600 patients undergoing that operation—a remarkable record.

A surgeon looking back over many years on his work in the operating theatre, with all its strenuous endeavour, must with a humble and grateful heart acknowledge how much of his success has been due to the self-abnegating and often poorly acknowledged work of those who, at the anaesthetist's end of the table, with the patient's life in their hands, made that success possible. I feel this very deeply, and in bidding farewell to a dear old friend and colleague rest assured that I will not be held to disparage the many great anaesthetists with whom I have worked when I write that the greatest of them all has gone.

VICTOR BONNEY.

Sir COMYNS BERKELEY writes:

For over forty years Herbert Charles administered anaesthetics to most of my patients. During this somewhat unusual experience never once did I know him lose his temper; never once did I know him to get "rattled"; never once do I remember his having expressed any anxiety as to the condition of the patient which might have embarrassed the operator. He was always in complete command of the anaesthesia, and, in my opinion, no patient could have been safer than in his hands; he was a tower of strength during dangerous operations or emergencies. "How is she, Charles?" "All right," or, "All right, but don't be too long"—nothing more and nothing less. Charles never indulged in irrelevant chatter during an operation, but remained quiet and confident, giving his whole attention to the patient. In other words, he was the perfect anaesthetist.

One of the older anaesthetists, who began practice before the advent of more modern methods, Charles's command of the administration of chloroform, ether, and A.C.E. was such—and his after-results, *qua* anaesthesia, were so good—that these more modern methods did not appear to appeal to him so much as to his younger colleagues. It must not be supposed from this that Charles was not an expert in such modern methods, if the surgeon preferred them, but he was an enthusiast for the old-established and well-tried methods of administering anaesthetics, in contradistinction to those more mechanical. It might have been that had I begun practice later I should have appreciated these modern methods the more, but Charles's administration was so perfect that I was entirely satisfied with his services, as were also my patients, many of whom during these long years from time to time have inquired after his well-being, and referred with great appreciation to his kindness and the confidence with which he inspired them during their trying experience. Had it been my lot to have an operation I should unhesitatingly have asked Charles to administer the anaesthetic.

Apart from the practice of his profession Charles was a keen Mason, a good shot, and a charming companion. His know-

ledge of natural history, antique furniture, pewter, and many other things made him always an interesting companion to anyone who had the privilege of his acquaintance. He was a most loyal friend and colleague; I cannot remember his ever saying an unkind word about any of our mutual acquaintances, and he thoroughly deserved his great popularity with all classes. Kind and helpful in all circumstances, his death has deprived me of one of my greatest friends whose services I shall always remember with increasing gratitude.

"The kindest man,
The best conditoned and unwearied spirit in doing courtesies."

Mr. W. SAMPSON HANDLEY writes:

By the death of Herbert Charles London has lost one of its leading anaesthetists. For many years as anaesthetist and consulting anaesthetist to the Middlesex Hospital, and up to the time of his death as senior anaesthetist to the Royal Masonic Hospital, he has exerted a wise and salutary influence on the practice of his art, and his teaching has inspired a long succession of pupils. More especially he will be remembered as an expert chloroformist who, through a period when English coroners did their best to vilify and proscribe a most valuable drug, continued to demonstrate its advantages and the methods of employing it safely. It is significant that when recently a film of chloroform anaesthesia was being made Charles was asked to officiate in the picture.

For many years Charles gave chloroform, usually preceded by morphia and accompanied by oxygen, for hundreds of breast operations without a single mishap. The method is specially advantageous in breast surgery, because it enables haemorrhage to be reduced to the absolute minimum, and permits diathermy to be safely employed if desired. If chill is avoided shock is in this way almost eliminated and the patient leaves the table with a good full pulse, of a rate often not exceeding 80. I am conscious of a great debt of gratitude to Herbert Charles, a debt extending over many years, for his artistry in chloroform anaesthesia. The root of this artistry lay in his power of obtaining immediate personal touch with a patient and securing implicit confidence. The quiet mind is an essential condition for subsequent smooth anaesthesia, and Charles could secure it even in nervous patients. If the patient is tranquil, with her mental agitations already soothed by morphia, if during induction any disturbance of the vital rhythms of respiration and circulation is reduced to a minimum, if the induction is unattended by respiratory obstruction, and if oxygenation of the blood is aided by a gentle stream of oxygen, a surprisingly small amount of chloroform, given by the "rag-and-bottle" method which Charles loved, will produce a light but perfectly adequate anaesthesia from which the patient is beginning to recover even before the bandaging has finished. These, combined with unremitting attention to the patient throughout the operation, were the principles upon which Charles worked. It must not be inferred that he was indifferent to more modern methods of anaesthesia, or unskilled in their use, but he recognized that what is attractive to the patient is not always in his best interests, and a wise conservatism was one of his outstanding qualities.

He approached all his patients, whether hospital or private ones, with a kindly human interest springing naturally from a generous and genial disposition that made the world his friend. Outside the profession the number of his interests and the range of his general knowledge made him a delightful companion.

JOHN ANDERSON, M.B., C.M.,

Director of Clinical Research Laboratory and Pathological Department, Victoria Infirmary, Glasgow.

We regret to announce the death of Dr. John Anderson on December 24, within a year of his retirement from the post of pathologist to the Victoria Infirmary, a position he had held for the long period of thirty-nine years. With his passing Glasgow has lost one of her ablest pathologists and a most respected citizen. Nowhere will his loss be more felt than in the Victoria Infirmary, which he served so long and so faithfully.

John Anderson was born at Overton, Ayrshire, and was educated at Thomson Street School, Dennistoun, and at Glasgow University, where he graduated M.B., C.M. in 1895. For a short time as a student he assisted Lord Kelvin, and often spoke with pride of that association. After qualifying he spent fifteen months in Glasgow Royal Infirmary as resident physician and surgeon, and following that was for two years assistant to Professor Workman in the pathological department. During that period he taught pathology to some of Glasgow's earliest women medical students. In 1898 Dr. Anderson was appointed pathologist to the Crichton Royal Institution, Dumfries, where he stayed for one year. In 1899 he was elected to the post of pathologist and bacteriologist to the Victoria Infirmary, Glasgow. At the time of his appointment the formation of a college for women medical students in connexion with the hospital was being considered, but nothing came of it. Dr. Anderson's laboratory at the Victoria Infirmary, however, was seldom without several senior research students, and the number of medical theses in Glasgow University which acknowledge his assistance and encouragement must be very large. From about 1910 he acted as one of the medico-legal examiners in Crown cases for Glasgow, and gave evidence in many important High Court trials there.

Dr. Anderson's own contributions to medical literature cover a wide field. In connexion with his medico-legal work he carried out numerous investigations into deaths under anaesthesia, and in his hands this meant an enormous amount of detailed work. Doubts always came to him more easily than conclusions. His knowledge of pathological histology was unusual and was gained during many special investigations which he undertook as often as not to help his colleagues. He was not excelled among his contemporaries in his skill in performing post-mortem examinations, perhaps because he had done so many of them. He had been a member of the British Medical Association since 1903, and when the Association met in Glasgow in 1922 he acted as secretary of the Section of Pathology.

Anderson's constant faithfulness to duty was perhaps his chief characteristic—or, at all events, the one that made most impression on his colleagues. He was always at his post weekday or Sunday. If he was not in his laboratory he would probably be at the High Court. There is no doubt that he wore himself out in service and that he was well beloved and respected by all.

J. N. MACLAUGHLIN, M.D.

The city of Londonderry lost not only one of its leading medical practitioners but also one of its most prominent citizens, and one whose loss will be felt by all classes and creeds, in the death on Christmas Day of Dr. J. N. MacLaughlin at the age of 55. Dr. MacLaughlin was educated at Clongowes Wood College, and graduated M.B., Ch.B. at Edinburgh in 1906, taking his M.D. four years later. During the war of 1914–18 he served with distinction in the R.A.M.C., and was twice mentioned in dispatches by Sir John French. Ill-health compelled him to retire in 1917; and it may be said that during his lifetime he never completely recovered from the illness then contracted. He retired with the rank of major, and, settling down to civil life, conducted a large practice in his native city and the surrounding districts. Yet he found time to take part in various social and public activities. He was the second president of the Derry Rotary Club and the first district chairman for all Ireland, and he had been secretary of the Derry Division of the British Medical Association for the past twenty years. His last act before his

fatal illness was the formation of the Emergency Committee. He served as honorary surgeon to the Derry City and County Hospital with very great distinction. For a brief period he was medical officer for Derry City, and was ever at hand to help all those who had need of his advice. Dr. MacLaughlin had a wide circle of friends, which was made evident by the large attendance at his funeral of those who came to tender their last respects to one who, by his professional skill and personal charm, was worthy to be termed a "beloved physician."

We announce with regret that Dr. THOMAS BUXTON FLINT died suddenly on January 9 at Buxton in the house in which he was born seventy years ago. He had practised there for forty years, retiring about a year ago. Dr. Flint's family, including his father, uncle, and grandfather, had been in practice in Buxton for well over a century. Dr. Flint was a student at Owens College, Manchester, and after qualifying M.R.C.S., L.R.C.P. in 1896 he held the posts of senior house-physician at the Royal Infirmary and of house-surgeon at the Manchester Northern Hospital for Women and Children. He was one of the earliest medical motorists, and owned his first car about the end of the last century. In 1902 he was appointed to the staff of the Devonshire Royal Hospital, became consulting physician in 1922, and was a member of the Committee of Management up to the time of his death. In 1906 he was apointed medical officer of health to the Urban District of Buxton, and on incorporation in 1917 he took over the wider duties which he carried on until his retirement in 1935. In 1927 he was made a Justice of the Peace. Reserved in disposition and somewhat diffident in manner, Dr. Flint did not make a wide circle of friends, but was greatly esteemed by his patients and by those who shared his favourite sports, shooting and fly-fishing, in both of which he was an expert. He married twice and leaves a widow and a daughter of the first marriage, but there is no member to carry on the family tradition in medicine.

Dr. THOMAS CAMERON, formerly well known as a surgeon and gynaecologist at Hull, died on January 9 at Gibraltar. In recent years he had lived at Gerrards Cross and was honorary medical officer to the Chalfont and Gerrards Cross Hospital, but he moved a short time ago to Scarborough. A student of Glasgow University, he graduated M.B., C.M. in 1887, and joined the British Medical Association in 1890. Dr. Cameron was for many years honorary gynaecologist to the Hull and Sculcoates Dispensary, surgeon to the Hull Maternity Hospital, and surgeon to the Hospital for Women and the Victoria Hospital for Sick Children at Hull. In 1910 he contributed a paper to the *British Medical Journal* describing his method of operative treatment for chronic oophoritis and associated conditions.

Dr. THOMAS ARTHUR IVES HOWELL, formerly of Wandsworth, died in retirement at Roehampton on January 11. He trained for the medical profession at Guy's Hospital, and after qualifying as L.R.C.P., M.R.C.S. in 1879 became obstetrical resident and house-physician at Guy's. During many years of successful practice in Wandsworth he was honorary medical officer to the Bolingbroke House Hospital and consulting medical officer to the Royal Masonic Institute for Girls. Dr. Howell was a past vice-president of the South-West London Medical Society and a Justice of the Peace for the County of London. He had been a member of the British Medical Association for fifty-three years.

Dr. ALEXANDER RENNIE, who died on January 1 at Kintore, was born at Inverurie, Aberdeenshire, in April, 1859, son of James Rennie and Ethel, daughter of Sir James Murray. From the Grammar School he went on to King's College and Marischal College, Aberdeen, graduating M.A. in 1880, and M.B., C.M., with honours, in 1883. For ten years Dr. Rennie was medical officer in the British Consular Service in China, and for a longer time medical officer to the Imperial Maritime Customs. He had held the posts of surgeon and lecturer on surgery at the Alice Memorial Hospital and Nethersole Hospital, Hong Kong, and lecturer on materia medica in the Hong Kong College of Medicine. During the last war he was a captain in the R.A.M.C. and acted as medical officer in charge of the Northern Command Bombing and Signal School, Yorkshire. Dr. Rennie joined the British Medical Association in 1895 and remained a member until 1935, when advancing age and failing sight forced him to give up many activities.

We regret to announce the death on January 14 of Dr. ALFRED WILLIAM HINSLEY WALKER, one of the oldest practitioners in Harrogate. Born in 1860, he was educated in Manchester at Owens College, and in London at St. Thomas's and St. Mary's Hospitals, qualifying M.R.C.S., L.R.C.P. in 1887 and taking the M.D. of Brussels University soon afterwards. Before going to Harrogate Dr. Hinsley Walker worked for a time in Egypt and published in the *Lancet* a paper on the advantages of dry desert air in gout, rheumatism, and early phthisis. He retired about a year ago after practising in Harrogate as a spa physician for half a century, for the greater part of which he was medical adviser to the Hydro and a member of the honorary staff of the Royal Bath Hospital. He had been a member of the British Medical Association for the whole of his professional life, and attended the Annual Representative Meeting in 1918 as Representative of the Harrogate Division.

Professor VIGGO CHRISTIANSEN, who was born on December 9, 1867, and died on November 3, 1939, was the founder of Danish neurology. He was a pioneer in distinguishing between neurology on the one hand and psychiatry and general medicine on the other; and it was largely owing to his initiative that the chair of neurology was created in Copenhagen. His appointment as professor was only titular when it was made in 1911, and it was not till 1935 that he was appointed full professor.

Universities and Colleges

UNIVERSITY OF OXFORD

At a Congregation held on January 18 the following degrees were conferred:

D.M.—A. F. Foster-Carter.
B.M.—A. G. Hardy, D. H. Twining.

UNIVERSITY OF CAMBRIDGE

At a Congregation held on January 20 the following medical degrees were conferred:

M.B., B.CHIR.—*H. P. Dick, *M. C. Woodhouse, *R. Piper, *R. Wright, *R. J. T. Woodland, J. B. Bramwell, I. F. Smith, J. A. Cosh, P. J. R. Davis, R. Rowlandson, W. J. G. Evans, M. J. Greenberg, B. G. Gretton-Watson, K. M. Hay, A. C. Thackray, L. N. Grunbaum, C. C. Thomas, E. S. Goller, A. Ponder, C. H. F. Wood.

* By proxy.

The next examination for the degree of M.Chir. will be held on February 20 and 21 and March 1 and 2.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Lectures

The following lectures will be delivered at the College, Pall Mall East, S.W., all at 2.30 p.m.

The Mitchell Lecture (postponed from 1939) on "Some Observations on the Diagnosis and Treatment of Pulmonary Tuberculosis," by Dr. F. G. Chandler, on February 7; the Milroy Lectures on "Acute Infectious Diseases at School," by Dr. R. E. Smith, on February 13 and 15; the Goulstonian Lectures on "The Pathology and Treatment of Pulmonary Tuberculosis," by Dr. W. D. W. Brooks, on February 22, 27, and 29; the Bradshaw Lecture (postponed from 1939) "On the Nature of Disease in Infancy," by Dr. J. C. Spence, on March 7; the Oliver-Sharpey Lectures on "The Mystery of Alimentation," by Professor E. P. Cathcart, F.R.S., on March 12 and 14; and the Croonian Lectures on "Recent Advances in Diabetes Mellitus: Aetiology and Treatment," by Dr. George Graham, on May 16 and 21. Any member of the medical profession will be admitted to the lectures on presentation of card.

Medical Notes in Parliament

The Unionist Parliamentary Health and Housing Committee received at the House of Commons on January 23 a deputation from the British Hospitals Association to explain the Provincial Hospitals Scheme. Mr. RICHARDSON, chairman of the provisional Central Council of the British Hospitals Association, explained that the regional scheme was planned for all hospitals and health services, voluntary and municipal. It began well in and around Oxford, but had not progressed in the North. Mr. GOODENOUGH, chairman of the Nuffield Provincial Hospitals Trust, said that Oxford had a Regional Hospitals Board of medical men and laymen. For the general scheme to save the voluntary hospitals and to promote the regionalization of hospitals Lord Nuffield had given shares which at present yielded an income of £115,000 yearly. The proposal was to have up to fifteen trustees of the Provincial Hospitals Trust and to establish about fifteen regions, each with a regional council reporting to the Central Council. Subregions might be established later. Mr. HYDE, secretary of the provisional Central Council, remarked that the Merseyside Hospital Council was already in effect a Divisional Regional Council. The Oxford and Berkshire Regional Council had established eighteen subdivisions. Of the available income of £115,000, £100,000 would be used in grants to hospitals, and about £15,000 for administration and to finance appeals.

On January 18 the Parliamentary Medical Committee held a meeting open to all M.P.s. This was addressed by Dr. Elliot on civilian sick in war. He said ampler provision was being made now than in September for the civilian sick. The staff of St. Bartholomew's Hospital, in three hospitals, was treating as many inpatients as a year ago. Altogether 150,000 beds were available. Huts were going up, with marquees in reserve. Nurses numbered 15,000 trained, 7,000 assistant, and 75,000 auxiliaries. He was going to appoint matrons for ten regions. Evacuation had produced a minimum of trouble, especially as regards maternity. The incidence of infectious diseases had been less than in 1938. He spoke of the good work by the Central Medical War Committee of the British Medical Association and by medical officers of health. In meeting the normal civil needs of the population there had been setbacks—for example, in tuberculosis. Patients in tuberculosis institutions numbered 19,150 in November, as against 26,000 in July. Some had been discharged unwisely; some discharged themselves. Health visitors had been much absorbed for first-aid posts. General practitioners, as well as specialists, had been less busy than usual.

Dr. Edith Summerskill raised the question of maternity accommodation in reception areas, and Dr. Haden Guest that of domiciliary treatment of unaccompanied evacuated children. Sir Francis Fremantle was in the chair.

G.M.C. Election

Mr. GROVES asked on January 16 by what legal authority the election of a member of the General Medical Council then due had been postponed, and when the election would take place. Major TRYON answered that on the application of the General Medical Council an Order in Council had been made under the Chartered and Other Bodies (Temporary Provisions) Act, 1939, extending until the end of the present year the term of office of certain direct representatives who were members of the General Medical Council.

Annual Health Returns for Reception Areas

Sir FRANCIS FREMANTLE urged Dr. Elliot on January 18 to ensure that the annual health returns from county and local authorities distinguished between those of evacuated persons in reception and neutral areas and those of the true population of such areas. Dr. ELLIOT answered that he was unwilling in present circumstances to impose additional requirements upon local authorities in making these returns. The forms used in previous years had been modified with a view to saving work of local authorities. Other movements of population than that of persons officially evacuated under the Government evacuation scheme had taken, and were taking, place. It would be difficult, if not impossible, to determine what should be regarded as the true population of an area.

Health Insurance Amending Regulations

Dr. ELLIOT assured Mr. Groves on January 18 that he was satisfied the National Health Insurance Medical Benefit Amendment Regulations (No. 4), 1939, did not infringe the principle of the free choice of doctors by insured persons. He had consulted the Insurance Acts Committee of the British Medical Association and the National Association of Insurance Committees before making the regulations. The body which he proposed to consult under the National Health Insurance Medical Benefit Amendment Regulations (No. 3), 1939, was the Insurance Acts Committee of the British Medical Association, which was the body authorized by the conference of Local Medical and Panel Committees to represent their views on matters arising out of their statutory functions.

Medical Research Council

In the House of Lords on January 18 Lord STRABOLGI inquired about the application of science to the war and the co-ordination of the scientific departments. Lord CHATFIELD, in his reply, said the reserve of scientific information provided by the Medical Research Council under Sir Edward Mellanby was freely available to all Departments of State. The scientific talent of this country was fully mobilized.

Invalids and Rationed Foods

Answering Admiral Beamish and other members on January 18, Mr. W. S. MORRISON said that medical opinion had not established that supplementary allowances of rationed foods for invalids were necessary at present. At the request of Dr. Elliot, Mr. Colville, and himself the Medical Research Council had appointed an expert committee to advise from time to time whether it was necessary on medical grounds to modify or supplement rations in the case of invalids or other persons on special diets. For nursing mothers local food offices issued a child's ration book as soon as a birth was notified. This could be used by the mother to supplement her own.

Improved Old Age Pensions

In the House of Commons on January 23 Sir JOHN SIMON, replying to a number of questions, outlined the Government's scheme for old-age pensions. He said that he had seen no scheme for increasing, by means of a flat-rate addition, the scale of old-age pensions all round which would not involve further burdens on public funds. About 275,000 pensioners got additional relief from public assistance authorities, and the annual cost of such relief was about £5,250,000. He proposed to take away from the local authorities their present liability to supplement old-age pensions, including the pensions of widows over 60, and to place this obligation on central funds. The present family needs test, which had regard to the income of all liable relatives wherever they lived, would be replaced by the household needs test as now applied in the case of applicants for unemployment assistance. The proposal would enlarge the benefits of the contributory scheme to include within it wives and insured women over 60. Spinsters over 60 would get 10s. a week. A Bill was being prepared by the Minister of Health, and would be introduced without undue delay.

Notes in Brief

Proposals for the increased supply of liquid milk under maternity and child welfare schemes have been presented to the Ministry of Health by 176 welfare authorities in England and Wales.

Twenty-five have been approved. Schemes are in operation in seven areas. Consideration is being given to the general question of authorizing local authorities to purchase wholesale from the Milk Marketing Board.

Dr. Elliot has received representations on the desirability of securing the right of the dependants of men on service to medical treatment from their own doctor as an alternative to the charity of the doctor or treatment secured by application to the public assistance authority. The subject is being considered in consultation with the War Office.

Steps are being taken to convene a meeting of representatives of the counties and county boroughs concerned to consider further the question of establishing a radiotherapeutic institute for the treatment of cancer in South Wales and Monmouthshire.

Medical News

A special meeting of the British Social Hygiene Council will be held on Monday, January 29, at 2.30 p.m., in B.M.A. House, Tavistock Square. Urgent war-time problems are to be discussed, such as sex behaviour of young people, spread of venereal diseases, and conditions affecting seafarers in the ports. Among the speakers will be Sir Walter Langdon-Brown, M.D., and Captain G. S. Elliston, M.P.

A meeting of the Association of Clinical Pathologists will be held at the Holborn Restaurant, London, on Friday, February 9, when there will be a discussion on "The Regional Organization of Pathology," preceded by a dinner at 7.30 p.m.

The courses arranged by the Royal Institution to be given at 21, Albemarle Street, W., during the early part of this year include three lectures on Thursdays, February 9, March 7 and 14, at 3 p.m., by Sir Frederick Keeble, F.R.S., on plant hormones. The subscription payable by non-members for this course is 6s.

The seventh of the series of free public addresses on "The Deeper Causes of the War and the Issues Involved," arranged by the British Institute of Philosophy, will be given by Sir Richard Gregory, F.R.S., in the Assembly Hall (entrance in Craven Street, Strand, W.C.) of the Royal Empire Society, at 2 p.m., on Thursday, February 1. Subject: "Science and Humane Values." Chairman: Sir James Jeans, F.R.S.

In the series "Our Daily Life," "Living Streams" will be the title of the broadcast on January 31, at 2.20 p.m., and will include a dramatic interlude in which listeners will hear William Harvey discussing his discovery of the circulation of the blood with King Charles I. The B.B.C. also announces that at 10 a.m. on February 2 a midwife will give a talk on "New Babies: Planning the Arrival."

The National Council of Social Service since the beginning of the war has been issuing pamphlets entitled "Citizens' Advice Notes," and the first twelve numbers are published in book form at the price of 2s. 6d. Subsequent pamphlets (Nos. 13–24) will be published on a subscription basis of 4s. for the twelve issues, each of which will appear at intervals of approximately ten days. The notes explain and annotate all recent Acts and Orders that have come into force, together with all war-time legislation since September, 1939. Copies can be obtained from the National Council of Social Service, 26, Bedford Square, London, W.C.1.

On January 18 at the Marylebone Police Court Dr. Riccardo Vicchi of Harley Street, W., was fined £20 in all, and ordered to pay £5 5s. costs, on four summonses for failing to make entries in his dangerous drugs register of a total of 62½ grains of morphine sulphate obtained by him last November from a firm of chemists. Dr. Vicchi said he had bought the drugs for medical treatment of patients, and the only offence he had committed was not to keep the register in order.

The issue of *Archives de Médecine des Enfants* for November–December, 1939, is devoted to avitaminoses.

The Italian Minister of the Interior has offered a prize of 30,000 lire for the discovery of chemical or biological substances of native origin to take the place of insulin.

According to the *Wiener klinische Wochenschrift* the Lainzer Hospital in Vienna is now the largest radium institute in Germany and the fourth largest in the world. It possesses five grammes of radium.

Professors Emil Abderhalden of Halle, August Bier and Sauerbruch of Berlin, Albert Döderlein of Munich, Franz Volhard of Frankfort, Hans von Haberer of Cologne, Erwin Payr of Leipzig, and Ludwig Aschoff of Freiburg, among others, have recently been made honorary members of the Vienna Medical Society.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

With the exception of measles and acute pneumonia, there has been a slight fall in the incidence of the commoner notifiable diseases in Great Britain and Eire during the week—for example, diphtheria and whooping-cough in London and in all regions except Northern Ireland, and scarlet fever with the exception of Scotland. Measles remains largely a disease of urban and rural areas and has not to any extent involved the great towns, except in Carlisle and Gloucester. Acute pneumonia has increased chiefly on account of its spread in the great towns and is due probably to the prevalence of influenza. This is borne out by the figures for deaths from influenza, which have risen from 27 to 46; but this is little more than half the figure for the corresponding week of 1938. High figures for measles and relatively low figures for acute pneumonia were recorded in Cumberland: measles 219 (Carlisle 95), pneumonia 7; Lancaster: measles 220 (Blackpool 39, Lancaster 33, St. Helens 26, Liverpool 13), pneumonia 81 (Liverpool 16); Gloucestershire: measles 251 (Cheltenham M.B. 92, Gloucester 85, Bristol 19), pneumonia 11; Durham: measles 119, pneumonia 48; Glamorgan: measles 207, pneumonia 30; Yorkshire (West Riding): measles 113 (Sheffield 4, Skipton 26), pneumonia 75 (Sheffield 22, Skipton 0). On the other hand, in Stafford there were 45 cases of pneumonia against 38 of measles, in London 27 cases of pneumonia and 9 of measles (distributed among eight boroughs), in Middlesex 27 cases of pneumonia and 15 of measles. It is probable that an appreciable proportion of the cases notified as measles are actually cases of German measles, especially in adults. Children appear to be even less susceptible than usual to the type of German measles prevailing at present. Of the 125 cases of measles notified in Northern Ireland all but one (in Lisnaskea rural district) were in Belfast.

Cerebrospinal Fever.—During the week there was a sudden increase in the incidence of cerebrospinal fever in England and Wales (in which London shared) and in Scotland, from an average of 27 in the preceding five weeks to 45 for the former and from 7 to 16 for the latter. The counties with more than one case were: Durham 3 (South Shields, Crook and Willington, Jarrow, 1 each); Lancaster 3 (Salford, Warrington, Whiston, 1 each); Leicester 5 (Leicester 2, Market Bosworth 2, Melton Mowbray 1); London 5 (Camberwell, Lambeth, Paddington, Wandsworth, Westminster 1 each); Southampton 3 (Southampton 1, Alton 2); Stafford 2 (West Bromwich, Aldridge, 1 each); Sussex East 2, both in Brighton; Warwick 2 (Birmingham, Leamington 1 each); Yorks (East Riding) 2, both in Kingston-upon-Hull; Caernarvon 2 (Penmaenmawr, Gwyrfai, 1 each); Denbigh 3 (Wrexham M.B. 1, Wrexham R.D. 2); Glamorgan 3 (Cardiff 1, Rhondda 2); Monmouth 2 (Newport C.B. 1, Nantyglo and Blaina 1). The 3 cases in the Wrexham district (none in the previous week) belong to an outbreak which began as early as November 1 and in which there have been 25 cases so far, 2 of which have proved fatal. Of the Scottish cases more than one were notified in Glasgow 5, Ross and Cromarty 3, Ayr 2.

No. 52 for 1939

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 30, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939 (a)	1939 (b)	1939 (c)	1939 (d)	1939 (e)	1938 (Corresponding Week) (a)	1938 (Corresponding Week) (b)	1938 (Corresponding Week) (c)	1938 (Corresponding Week) (d)	1938 (Corresponding Week) (e)
Cerebrospinal fever	45	5	16	—	1	24	4	6	1	—
Deaths		—	—				1	1		
Diphtheria	805	20	245	42	37	1,096	129	217	54	13
Deaths	24	—	9	2	3	35	6	8	3	—
Dysentery	37	2	27	—	—	13	3	9	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	4	—	—	—	—	5	—	1		—
Deaths			3				3	2		
Enteric (typhoid and paratyphoid) fever	12	1	6	8	1	34	4	4	3	3
Deaths	—	—	1	—	—	1	—	—	1	—
Erysipelas			62	8	7			60	11	9
Deaths		1	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	22	3	12	4	4	51	16	8	7	4
Measles	2,157	9	16		125		17	8		3
Deaths	7	—	—	1	—	3	—	—	—	—
Ophthalmia neonatorum	50	4	15		—	76	4	36		—
Deaths										
Pneumonia, influenzal*	649	27	15	3	6	1,131	122	16	14	21
Deaths (from influenza)	46	8	3	1	—	89	8	8	7	6
Pneumonia, primary			271	13				317	12	
Deaths		13		13	9		26		28	20
Polio-encephalitis, acute	—	—				1	1			
Deaths		—					—			
Poliomyelitis, acute	4	—	—	—	—	16	4	2	1	—
Deaths		—	—				—	—		
Puerperal fever	2	2	10		—	4	4	13		—
Deaths		1†					—			
Puerperal pyrexia	129	6	9		2	137	7	12		4
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,042	22	169	50	74	1,572	100	286	55	75
Deaths	3	—	—	—	—	6	—	1	—	1
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	--	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	602	9	11		6		149	234		15
Deaths	3	1	—	1	1	7	1	12	1	1
Deaths (0-1 year)	322	38	99	22	18	431	92	83	37	33
Infant mortality rate (per 1,000 live births)						71	76			
Deaths (excluding stillbirths)	5,960	1,080	715	212	152	6,130	1,137	826	308	229
Annual death rate (per 1,000 persons living)			14.5	14.3	13.4	15.1	14.5	16.8	18.8	20.3
Live births	3,788	507	831	260	167	5,099	932	863	277	207
Annual rate per 1,000 persons living			16.8	17.5	14.7	12.5	11.9	17.6	20.9	18.3
Stillbirths	211	22	27			219	24			
Rate per 1,000 total births (including stillborn)			31			41	25			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
† Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Mediseca Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.), 95, Merrion Square, W., Dublin (telephone 62550 Dublin).

LETTERS, NOTES, ETC.

Red Nose

"A. W. B. L." will be grateful for advice in treatment of a woman, aged 36, who suffers from redness of the nose. No indigestion or dietetic abnormalities. The patient's mother has suffered all her life from the same, distressing to vanity, complaint. General health is excellent.

Income Tax

Stock of Radium

"F.R.C.S.Ed." explains that his firm bought some radium years ago for £1,400; at March 31, 1937, it stood at £1,400 in the firm's books, and was valued as at March 31, 1938, at £450. Their accountants contend that the radium should be treated as "trading stock," but the inspector of taxes regards the purchase as capital expenditure, and the loss incurred on resale as not being allowable for income-tax purposes.

*** In our view neither is entirely right. The radium was held for use and not for sale, and consequently the claim to treat it as "trading stock" strictly fails. On the other hand, though the original purchase involved capital outlay, we should regard the purchase of the radium in much the same way as that of an unusually large quantity of a drug for use over many years. Looked at from that standpoint the allowance due *each year* would not depend on revaluation (which would be affected by current prices, etc.) but on a reasonable allocation of the cost of the radium over its probable life. Suppose, for instance, that x is the number of years for which the radium will be suitable for its purpose, and that it can then probably be sold for £y; in that case the annual allowance is $\frac{£1,400-£y}{x}$ until the aggregate allowances amount to £1,400−£y or the radium is sold.

QUERIES AND ANSWERS

Comforts for Mothers in Emergency Maternity Hospitals

The National Council for Maternity and Child Welfare, which represents the more important national societies concerned with mothers and children, is issuing an appeal on behalf of expectant mothers and children under 5 in the emergency maternity hospitals. The council is receiving many applications for help and advice, and it is known that a vast amount of voluntary aid is at present unused because, while many people are anxious to give service in making garments, they are held back by lack of money with which to buy materials. This is particularly the case with many women's organizations and working parties throughout the country. Money received will be expended in obtaining materials at as low a cost as possible with the promised co-operation of the Personal Service League. The distribution of garments will be made in consultation with local maternity and child welfare authorities or responsible local organizations, thus ensuring a just distribution and avoiding the risk of zealous persons writing to a number of charities at the same time, and obtaining an unfair proportion of clothing. In this way it should be possible to secure that garments will only reach those in genuine need, for whom they are intended, and not families who should be able to provide for their own requirements. Contributions should be sent to the honorary treasurer of the National Council for Maternity and Child Welfare, Carnegie House, 117, Piccadilly, London, W.1, and marked "Materials Fund."

Cleansing of Wounds

Dr. W. F. COOPER (London, S.W.20) writes: A method used by me in a few cases, and found very good, certainly deserves investigation. I had a case of a severely lacerated injury to the hand; it was septic, and was cleaned and bound up. The patient, a native, did not return for days, and then the smell was very bad. Unbound, it was seen to be full of maggots; but it was beautifully clean. Dressed with paraffin oil from the lamp, some bismuth carbonate, and acriflavine, it was not seen for a considerable time, and then had given a very excellent result. Stitches put in had come away. Having many pawpaws growing on the place—very useful for tough meat—I tried this in alkaline solution in a few cases and found it most efficacious. Papain will hydrolyse tissues, and what is not rendered soluble is so friable that it is easily removed. The wound is left clean. I suggest that papain should be tried in other cases. It may not be so good on white people, but it seems that it could do no harm, anyhow. It should remove much dead tissue as well as liquefy pus. Whether it would hydrolyse bacteria I don't know. Papain acts in acid or alkaline or neutral solution, and, as distinct from pepsin, etc., it hydrolyses proteins directly to amino-acids. The fresh juice is said to produce sores which are difficult to heal, but personal experience is quite contrary to this. Though handling quite an amount of it, I have never met with any sore.

Thiosulphate for Allergic Conditions

Dr. F. L. SKINNER (London, S.W.1) writes: The following account might prove of interest. While I was resident medical officer in a Kent county hospital a severe case of pemphigus was admitted under my care. Knowing nothing about it, I read all the text-books and treated it as they suggested—boracic powder applied to the skin, quinine mixtures by mouth, sodium ametox intravenously (10 c.cm. alternate days), and aspiration of bullae. I learned that it was an allergic manifestation, and so had an eosinophil count done. On admission this was 8 per cent. After three weeks of the above treatment the eosinophil count had risen to 33 per cent. There were daily fresh crops of bullae. Referring again to the textbooks, I learned the usual course was six to eight months. At this I decided to alter treatment. I continued boracic powder, but cancelled other medication, giving in place 15 grains of sodium thiosulphate and 15 grains of calcium thiosulphate, three times daily. On the third day of this treatment the eosinophil count was down to 16 per cent., and there had been no new bullae for twenty-four hours. The eosinophil count steadily declined, and after twelve days was less than 2 per cent. Still no new bullae, and the patient insisted on taking her discharge Up to two months later there was no return of the condition. As this is an allergic condition I next decided to try my same mixture—15 grains each of calcium and sodium thiosulphate three times daily (Skinner's solution, as I call it to myself)—in other allergic conditions. I have since tried it in over twenty asthmatics. All of these were severe cases, and the patients claimed that their attacks lasted several days. With my treatment there was immense relief within twenty-four hours in every case. I have tried it in three cases of hay fever, with some relief, and in dermatitis of allergic origin, with questionable results.

Disclaimer

Dr. E. FRANKEL writes: In the *British Medical Journal* of January 6 (p. 14) appeared a short clinical memorandum on the use of evipan in a case of loss of memory, written by me while I was R.M.O. at Acton Hospital. I learn that an article appeared in a popular Sunday newspaper on January 14, being in effect an abstract of my memorandum and mentioning my name. I did not give any permission for the republication of this article, nor have I given an interview to any journalist. This article was published without my knowledge.